

COMMON
WEEDS
OF
ONTARIO

ONTARIO DEPARTMENT of AGRICULTURE
PARLIAMENT BUILDINGS - TORONTO, CANADA

Common Weeds of Ontario

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INTRODUCTION

In most agricultural areas of Ontario, losses from weeds exceed, by far, those from the multitude of other pests with which the farmer has to contend. Certain losses from weeds, as those associated with the cost of control measures, or say with livestock poisoning, are readily appreciated by farmers. Others, like the losses from reduced yields and quality of field crop and livestock products are more insidious, in that they exact a tremendous annual toll of which the farmer is usually unaware. For example, in Ontario, conservative estimates would place the loss from reduction in crop yields alone at from 30 million to 40 million dollars per year.

Accurate identification of weeds is very helpful for efficient and effective weed control. In this bulletin about 125 of the more common weeds found in Ontario are described and illustrated, and it is hoped that this will greatly assist farmers and others, who are not trained in plant identification, to recognize these pests. Some weeds are found in practically all the agricultural areas of the Province; others may have a more restricted distribution. However, wherever they may appear, they may be considered to be a nuisance.

Certain losses from weeds may be attributed to the fact that these plants act as hosts for insect and plant disease pests of economic plants. These have been noted either in tabular form or in the text.

A new feature of this bulletin is the photographic illustration of fruits or seeds of some 114 weeds in the form in which they are most likely to be seen. These reproductions should assist farmers and seedsmen in the identification of weed seeds.

WEED CONTROL

The following are considered to be basic requirements for a successful weed control program:

1. Use weed free seed of approved varieties or strains.
2. Sow seed at the correct depth in moist, weed free, firm seed-bed.
3. Maintain the soil at a satisfactory pH (acidity) and fertility level by applying lime and fertilizer if necessary.
4. Clean all equipment, especially that used for tillage and harvesting, before bringing it on the farm, or before moving to other fields on the farm.
5. Spray, mow, or otherwise control weeds before they ripen seeds on fence-rows, roadsides, barnyards, and abandoned land. Seeds from these weeds may be carried to fields by birds, animals, wind, or water run-off.
6. Mow, utilize for grass silage, or otherwise destroy weedy crops. Such crops are unproductive, and serve as a source of weed seeds for cleaner areas of the farm.

7. Clean small seeds out of feed grain, and grind feed containing larger weed seeds. Intact weed seeds readily pass through the digestive tracts of livestock.
8. Ensure a thorough kill of weeds by timely tillage operations with proper equipment in correct adjustment. Usually tillage in hot, dry weather is most effective in killing weeds.
9. Follow an approved crop rotation. By rotating crops no one group of weeds can become established.

Weed control measures are closely related to the life habits of weeds. These life habits may be classified as follows:

Annuals — Weeds that usually germinate, bloom, produce seeds, and die in one growing season. Examples: Common ragweed, wild mustard.

Winter Annuals — Weeds that may either 1. germinate and produce a leafy rosette in the fall, and then flower, seed, and die the following summer, or 2. germinate in the spring, and act as a normal annual. Examples: Stinkweed, shepherd's purse.

Biennials — Weeds that usually germinate and produce a leafy rosette one season, and then complete their life cycle and die the next. Examples: Wild carrot, burdock.

Perennials (Herbaceous) — Weeds that live a number of years, developing each year from underground stems, or roots, or crowns. Examples: Perennial sow thistle, dandelion.

Control measures for annual, winter annual, and biennial weeds are largely designed to destroy the weed plants before they offer too much competition to the crop, or, before they go to seed. Tillage, spraying or mowing are the main methods that are used. Control is often difficult, because seeds of many weeds may lie buried for years in the soil without germinating, and because the germination of many weed seeds coincides with the germination and early seedling growth of the crops in which they are troublesome.

For perennial weeds it is necessary to prevent their spread by seeds, as for annuals, and, in addition, to eradicate a fleshy root system that has many undeveloped buds and adequate food reserves. Since (except for quack-grass) most of these roots are below normal tillage levels, attempts at dragging them out are unsuccessful and usually result in root pieces being dragged to uninfested parts of the field. On the other hand, the roots may be killed by starvation if no green growth is allowed to become established on the ground surface. The type of operation necessary to do this has been termed "*black fallow*."

Black fallow operations for many perennial weeds are most successful during late summer and fall. At this time these weeds are replenishing the food reserves that will be used to make new growth the following spring. With certain persistent weeds, such as leafy spurge, at least two seasons black fallow from spring to fall are necessary for eradication. Chemical treatments are also very valuable in handling perennial weeds.

Chemical Weed Control

Control of weeds by the use of chemicals has made rapid strides in recent years. To-day there are a number of different types of treatments, involving a

wide range of chemicals, that may be worked into a farm program. Since recommendations must be followed closely the reader is referred to the current "Guides to Chemical Weed Control," and the "Handbook on Chemical Weed Control," available from the Agricultural Representative's office.

The Weed Control Act for Ontario

Certain regulations regarding weeds and their control have been formulated by the provincial government and brought together to make up what is called "The Weed Control Act." The act outlines clearly the duties of land occupants or owners, municipalities, townships, counties, and districts with respect to noxious weeds. "Every occupant of land, or if the land is unoccupied, the owner, shall destroy all noxious weeds thereon as often in the year as is necessary to prevent the ripening of weed seeds. Every road authority within the meaning of the Highway Improvement Act is considered to be an occupant of land." It is responsible for weed control on the land under its jurisdiction.

Seed grain has been recognized as an important mode of distribution of weed seeds. In order to reduce weed seed dispersal with seed grain, the act states that seed cleaning plants must be licensed and the plants must operate up to the minimum standards prescribed in the regulations.

Threshing machines, combines, and silo filling equipment have also been agents for weed seed transportation from farm to farm. Such machines, which are moved from one locality to another, must be thoroughly cleaned of debris and seeds after using, or before moving to another location.

A few years ago, when one wished to make a good weed collection, he found a collector's paradise around grain elevators, grist mills, flour mills, and grain grinding plants. It is now required that all such plants dispose of refuse containing weed seeds in such a manner as will prevent weed seeds from growing or spreading.

To enforce its provisions, the act requires that "The council of every county, every municipality not forming part of a county for municipal purposes, and every municipality in a territorial district shall, and any town, village or township in a county may, pass by-laws appointing one or more persons as inspectors." These inspectors have the authority to inspect farm buildings, other than dwelling houses, and farm machinery or vehicles at any time between sunrise and sunset. They may ask land occupants to destroy weeds and will give advice in the destroying of noxious weeds. They also have the authority to have the weeds destroyed at the expense of the occupant or owner if he fails to give the required co-operation. All local governing bodies are subject to the same inspection, and the clauses of the act relating to the destruction of weeds as the individual.

Throughout the province the weed inspectors receive much assistance from many organizations interested in weed control, and the majority of individuals are willing to co-operate in the destruction of plant pests. However, it is impossible, in an area as great as the province of Ontario, to investigate every possible habitat for noxious weeds. This necessarily places the main responsibility for weed control on the farmers, those commercially handling grains, the municipalities and the road authorities. If these are interested in increasing both the financial and aesthetic value of their property they will carry on their own thorough weed control program without the legal enforcement of the act.

In addition to the Weed Control Act for Ontario, there is the Seeds Act administered by the Canada Department of Agriculture. This deals with the sale of seed to be used for seeding purposes.

WEEDS THAT ARE HOSTS OF INSECTS INJURIOUS TO CULTIVATED PLANTS

WEED HOST	INSECT PEST	CULTIVATED PLANTS ATTACKED
Docks, burdock, giant ragweed.	Stalk-borer	Dahlias, hollyhocks, asters, rhubarb, pepper, tomatoes, potatoes, tobacco, corn.
Docks	Rhubarb-curculio	Rhubarb.
Docks, peppergrass, shepherd's purse, pigweeds.	Melon-aphid	Melons, cucumber.
Lamb's quarters, shepherd's purse, common ragweed.	Potato-aphid	Potatoes.
Lamb's quarters, pigweeds, chickweeds.	Spinach flea-beetle	Spinach.
Lamb's quarters, pigweeds, chickweeds.	Spinach leaf-miner	Spinach, chard, beets, mangolds.
Pigweeds, wild carrot, mullein, goldenrods, asters.	Tarnished plant-bug	Dahlias, chrysanthemums, celery, beets, strawberries, asters.
Mustards.	Cabbage-worm	Cabbage, cauliflower, turnips, rape, brussels sprouts, broccoli, kale.
Mustards.	Cabbage-aphid	Cabbage, cauliflower, turnips, rape, brussels sprouts, broccoli, kale.
Mustards.	Striped flea-beetles	Turnips, radishes, cabbage, cauliflower.
Mustards.	Turnip-aphid	Turnips.
Cinquefoils.	Strawberry-weevil	Strawberries.
Black medick, vetches.	Pea-aphid	Peas, alfalfa.
Wild parsnip.	Carrot rust-fly	Carrots, parsnips, celery, parsley.
Ribgrass.	Rosy apple-aphid	Certain apple varieties.

HORSETAIL FAMILY (*EQUISETACEAE*)

Field Horsetail, Scouring-rush, *Equisetum arvense* L. (Fig. 1). The horsetail is usually abundant in soil that has poor drainage, and is particularly common in low, sandy land. It has creeping, branching, underground stems which produce two aboveground structures. In the early spring a brownish, spore-producing stem appears (Fig. 1A). This dies off after shedding the spores, and is succeeded by a green, bushy, vegetative structure (Fig. 1B). The stems of this structure are impregnated with silica, making the plant rough.

Other species of horsetail occur in low meadows and pastures, but their characteristics, in general, are similar to the field horsetail.



FIG. 1. Field horsetail.

A, Spore producing branch. B, Vegetative branch.

Horsetails contain substances that are poisonous to livestock if eaten in quantities in pasture or in hay. Animals should not be pastured where the weed is abundant, and hay containing it should not be used.

This plant, and related species, often harbour the fungus *Rhizoctonia*, which is a serious parasite on potatoes, tomatoes and other cultivated crops.

COUCH, QUACK or SCUTCH GRASS

AGROPYRON REPENS



PLATE 1. Couch-grass.

GRASS FAMILY (GRAMINEAE)

Couch-Grass, Twitch-grass, Quack-grass, *Agropyron repens* (L.) Beauv. (Plate 1). This grass is a perennial, and very persistent once it has become introduced. The creeping, whitish or yellowish underground stems (rhizomes) may produce roots and upright stems at each joint; therefore, any part of this rhizome left in the ground during cultivation is a potential source of new growth. The stems are mostly smooth, and the leaves may be slightly hairy on the upper surface. The flowers are in groups (spikelets) on opposite sides of a zig-zag continuation of the stem. The seed is enclosed by two grayish bracts (Plate 17, no. 4).

Couch-grass is a host for ergot, a very poisonous fungus. Ergots can be recognized as the black masses that have developed in place of the seed. Pastures and hay containing any quantities of mature couch-grass should be watched for this fungus.

Wild Barley, Squirrel-tail grass, *Hordeum jubatum* L. (Fig. 2). A biennial or perennial grass, producing several stems one to two feet high. The stems are slightly bent at the base and smooth, but the leaves are rough-hairy. The spikes (heads) are nodding, and resemble barley in their general appearance, though more bushy. When young, the spikes are green, but turn a shiny, golden colour when mature, and are quite conspicuous.

The barbed awns may stick in the hair of animals, and may get into their nostrils, mouth and eyes, causing much trouble.



FIG. 2. Wild barley.

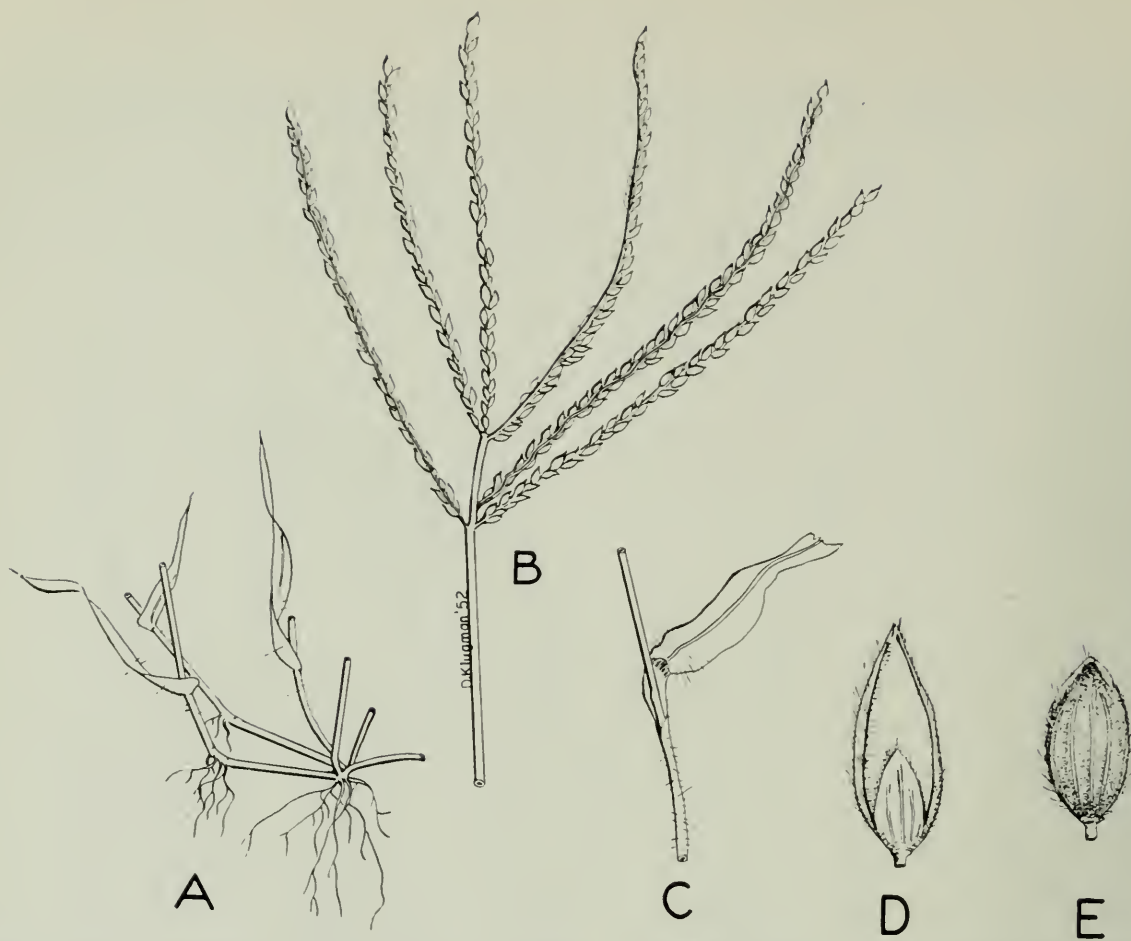


FIG. 3. Hairy crabgrass. A, Basal portion of stem. B, Flower branches. C, Part of stem and leaf. D, Fruit of hairy crabgrass. E, Fruit of smooth crabgrass.

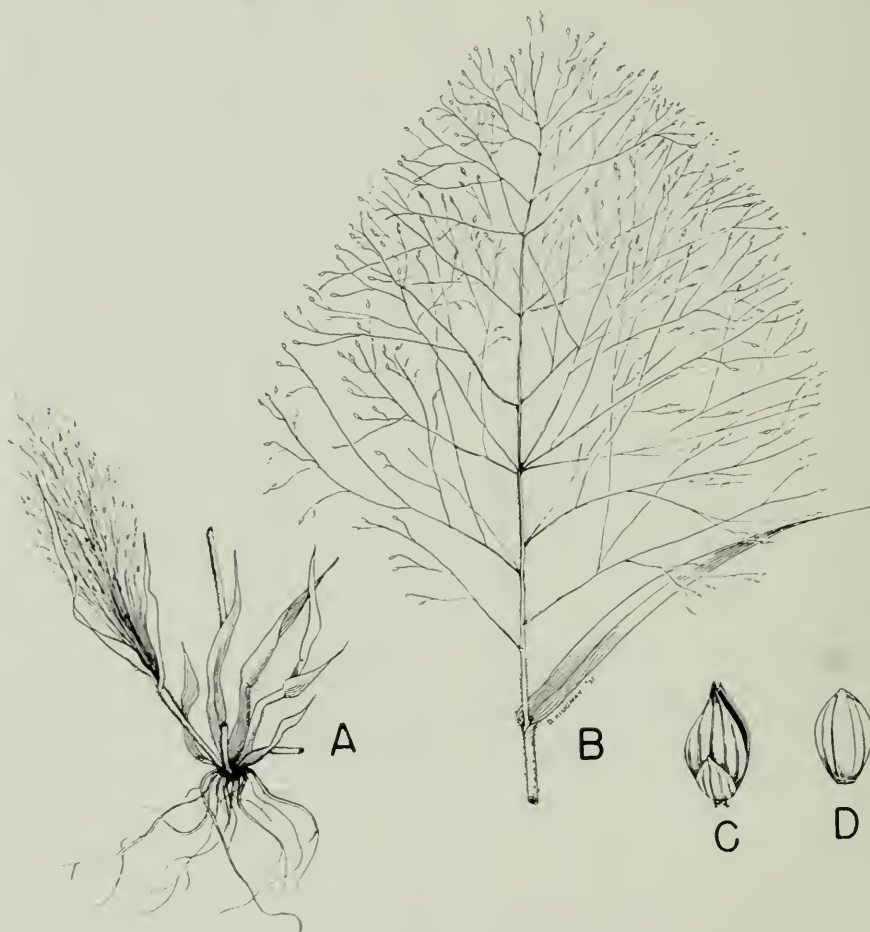


FIG. 4. Old witch-grass. A, Lower portion of stem. B, Panicle. C and D, Fruit.

Wild Oats, *Avena fatua* L., which is a common weed in grain fields in western Canada, does not appear to be a serious weed in Ontario. Seeds may be found in feed grain, and care should be taken in the disposal of any waste feed or screenings. However, the possibility of its importation and establishment should not be overlooked, and any infestations should be eradicated. Seed (Plate 17, no. 5).

Hairy Crabgrass, Finger-grass, *Digitaria sanguinalis* (L.) Scop. (Fig. 3). This is an annual grass that ripens its seed in the fall. The branching, smooth stems may be erect or prostrate, and roots form at the joints which contact the ground (Fig. 3A). The leaves are short and broad, and both the leaves and leaf-sheaths are hairy (Fig. 3C). When they mature they become purplish coloured. The flowering structure consists of from 8 to 12 “fingers” in one or two whorls at the top of the stems. The flowering branches are flat, and the grains are arranged alternately on one side of them (Fig. 3B). The seed coverings have numerous short hairs (Fig. 3D, Plate 17, no. 10).

Smooth Crabgrass, Smooth finger-grass, *Digitaria ischaemum* (Schreb.) Muhl., can be distinguished from the above species by the smooth, hairless leaves and leaf-sheaths. There are also fewer “fingers,” and the seeds are smaller than those of the hairy crabgrass (Fig. 3E).

Old Witch-grass, Tumble-grass, *Panicum capillare* L. (Fig. 4), is an annual grass occurring very frequently in ground that has been cultivated. It branches near the ground, and the stems and leaves are very hairy. The leaves are broad at the base, and taper to a point. The much-branched flowering portion produces many single, small, shiny, greenish grains. The seed-bearing parts of the stem often break off, and are blown around by the wind, thus scattering the seed (Fig. 4C and D, Plate 17, no. 11).

Barnyard-Grass, *Echinochloa crus-galli* (L.) Beauv. (Fig. 5). This grass is found in a variety of habitats in the fall of the year. It may grow from 1 to 5 feet high, and often branches near the surface of the ground. The stems are smooth and rather stout, and the leaves are smooth and broad. The flowering portion of the stem consists of a number of branches bearing 2 to 4 rows of purplish grains on one side of the branches. The outer coverings around the seed have numerous little spines and a short or long barbed awn (Fig. 5B and Plate 17, no. 3). The inner coverings are smooth (Fig. 5C).



FIG. 5. Barnyard-grass.
A, Upper portion of stem. B, Fruit.
C, Seed with inner coverings.



FIG. 6. Fox-tail grass. A, General habit. C, E, and G, Leaf, fruit and seed of green fox-tail. B, D, and F, Leaf, fruit and seed of yellow fox-tail.

Green Fox-Tail Grass, *Setaria viridis* (L.) Beauv. (Fig. 6). This is a weedy annual grass found in the autumn in various kinds of habitats. The stems may be simple, or branching near the base, and erect or slightly reclining. The leaves are rather short, broad, and have a short tuft of hairs (the ligule) at the junction of the leaf and the leaf-sheath (Fig. 6C). The dense, bristly, green or purplish heads are 2 to 3 inches long and produce many seeds. There are 1 to 3 greenish bristles at the base of each grain (Fig. 6E). The seeds are more or less oval, flat on one side, and have a slightly wrinkled or roughened surface and brownish spots on the rounded surface (Fig. 6G and Plate 17, no. 8).

Yellow Fox-Tail Grass, *Setaria glauca* (L.) Beauv., is very similar in its general appearance, but can be distinguished from the former species by the numerous long hairs extending up the leaf for some distance from the leaf-sheath (Fig. 6B). The bristles are also lighter in colour, and there are 5 to 20 in a cluster under the seeds (Fig. 6D). The seeds have many distinct ridges crosswise on the rounded surface (Fig. 6F and Plate 17, no. 7).



FIG. 7. Sandbur.

Sandbur, *Cenchrus longispinus* (Hack.) Fern. (Fig. 7). This annual occurs with some frequency in some parts of Ontario, particularly in sandy areas. The stems are branching, and more or less reclining. One has only to see or feel the prickly heads in order to know the plant. The single flower is surrounded by several hard, spiny bracts (Plate 17, no. 9), and these may cause painful injury if they get into an animal's mouth. Workers in tobacco fields and market gardens may find them quite annoying.

THE SEDGE FAMILY (CYPERACEAE)

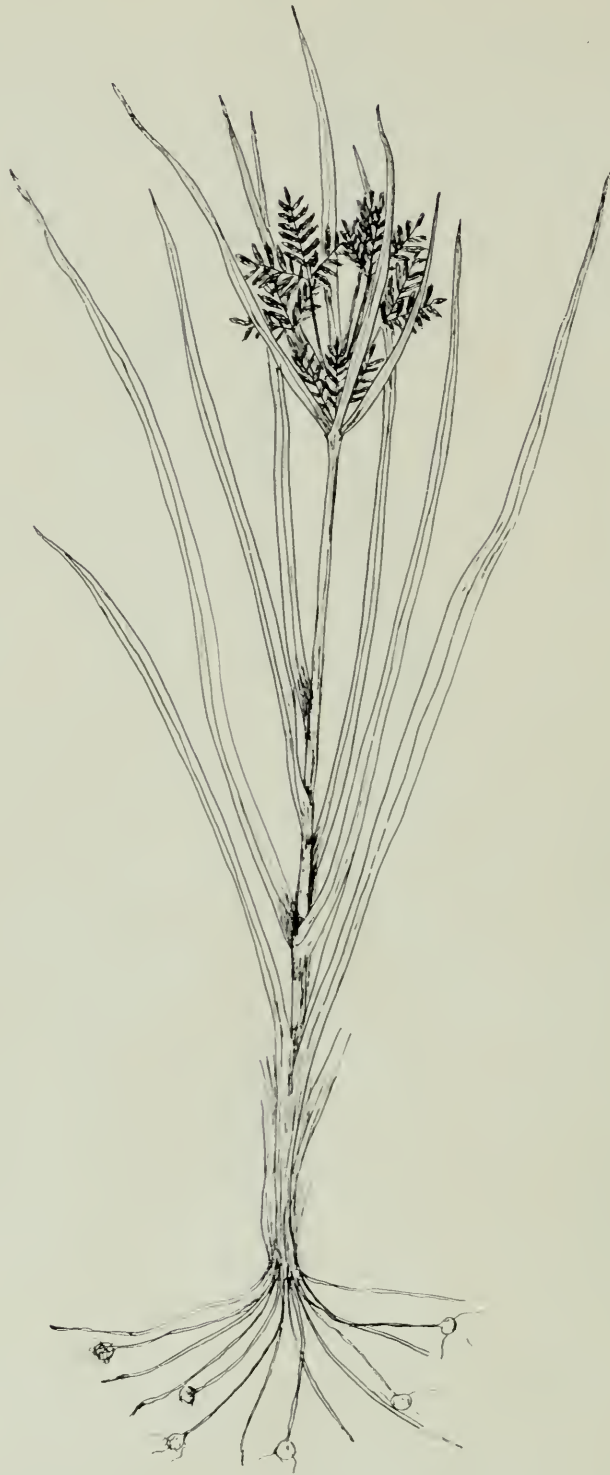


FIG. 8. Yellow nut-grass.

Yellow Nut-Grass, *Cyperus esculentus* L. (Fig. 8), is a perennial with the underground stems terminating in small tuberous structures from which new plants may arise. The presence of these make it a difficult weed to eradicate. The grass-like leaves are longer than the flower producing stem. The stem is triangular in cross-section. The flowers occur in an umbel-like cluster at the top of the stem, and are surrounded by a series of green leaves. The rather grass-like flowers are yellowish-brown.

In Essex, Kent and Elgin counties it is becoming a bad weed in low or moist cultivated ground. It occurs in a few other counties but to a lesser extent.

CURLED DOCK

RUMEX CRISPUS L.



PLATE 2. Curled dock.

THE BUCKWHEAT FAMILY (POLYGONACEAE)

Curled Dock, Sour dock, *Rumex crispus* L. (Plate 2). A perennial weed with a large, deep taproot and smooth, slender, striped stems with enlarged joints. It spreads by means of the numerous seeds. The alternate leaves are simple, narrow, pointed, and with curly or wavy margins. At the junction of the leaf-stalks (petioles) and the stem is a sheath, which is characteristic of the buckwheat family, to which the docks and the knotweeds belong. The flowers occur in clusters on branches from the axils of the stem-leaves. The smooth-margined seed coverings, which are at first green, turn brown as the seeds mature, and remain attached to the buckwheat-like, glossy, brownish seeds (Fig. 9A and B, and Plate 18, no. 2).

The life cycle of the rhubarb-curculio occurs on curled dock. Elimination of this dock is an essential for control of this insect. The melon-aphid is also found on dock.

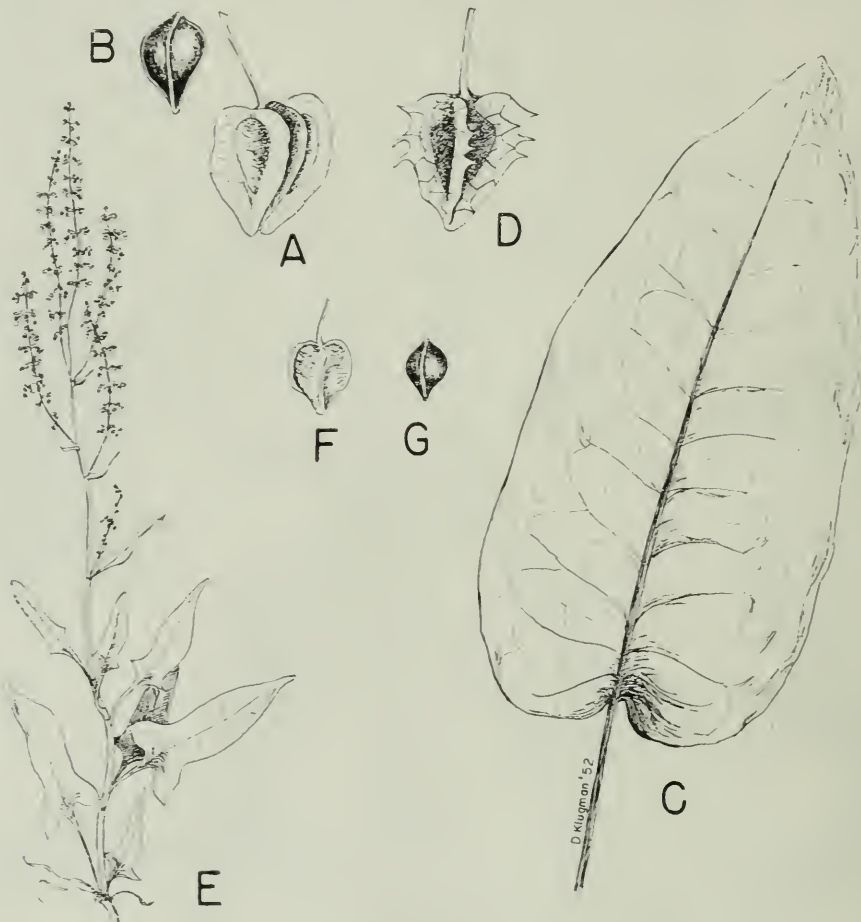


FIG. 9. A and B, Fruit and seed of curled dock. C, Leaf of broad-leaved dock. D, Fruit of broad-leaved dock. E, Sheep sorrel. F and G, Fruit and seed of sheep sorrel.

Broad-leaved Dock, Bitter dock, *Rumex obtusifolius* L., is distinguished from the curled dock by its large, broad, heart-shaped, smooth-margined lower leaves (Fig. 9C). Three of the divisions of the seed coverings have prominent teeth at their bases, and these are not present in the curled dock (Fig. 9D).

Sheep Sorrel, Sourgrass, *Rumex acetosella* L. (Fig. 9E), reproduces by both seeds and underground stems. This weed is much shorter than the two previous species, becoming only 1 to 1½ feet tall. The lower leaves have distinct projections or auricles. The flowers are small, and male and female flowers are on separate plants. The small, reddish-brown, glossy seeds usually remain enclosed in the roughened, brown seed-coverings (Fig. 9F and G, and Plate 18, no. 3).

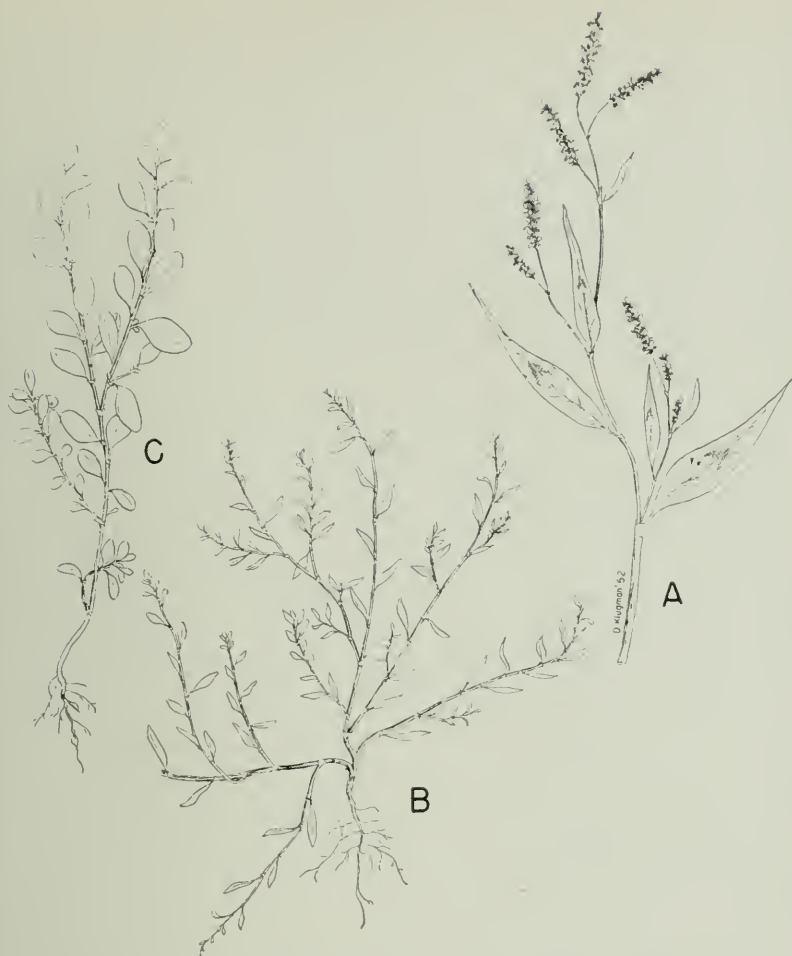


FIG. 10. A, Lady's thumb. B, Prostrate knotweed.
C, Erect knotweed.



FIG. 11. Wild buckwheat.

Lady's Thumb, Spotted knotweed, *Polygonum persicaria* L. (Fig. 10A). This is a common plant in farmyards, cultivated ground, and roadsides. It is a smooth, erect plant with alternate leaves, also swollen joints and leaf-sheaths, which are characteristic of the buckwheat family. The leaves are long, more or less elliptical in outline, and usually each has a triangular dark spot in the centre of the blade. The flowers are pinkish and close together on a common stalk from the junction of the stem and leaves. The seeds are small, glossy, purplish-black, and more or less lens-shaped (Plate 18, no. 5).

Along paths, roadsides, and farmyards, where there is much tramping, the **Prostrate Knotweed**, *Polygonum aviculare* L. (Fig. 10B), and the **Erect Knotweeds**, *Polygonum erectum* L. and *Polygonum achoreum* Blake (Fig. 10C), are very common. These prostrate or partially erect annual or biennial plants have small and inconspicuous flowers at the junction of the stems and leaves. There is often a pinkish tinge to the margins of the coverings of the seeds.

Wild Buckwheat, Black bindweed, *Polygonum convolvulus* L. (Fig. 11). In summer and autumn this annual weed is found twining over fences, around grasses, and plants of cultivated fields and gardens. The leaves are alternate, simple, smooth-margined, heart- or arrow-shaped and pointed. The flowers are on long flower-branches from the junction of the leaf-stalk and stem. The outer seed-coverings are greenish with white or coloured margins. The seeds are buckwheat-shaped, slightly roughened, and black (Plate 18, no. 4).

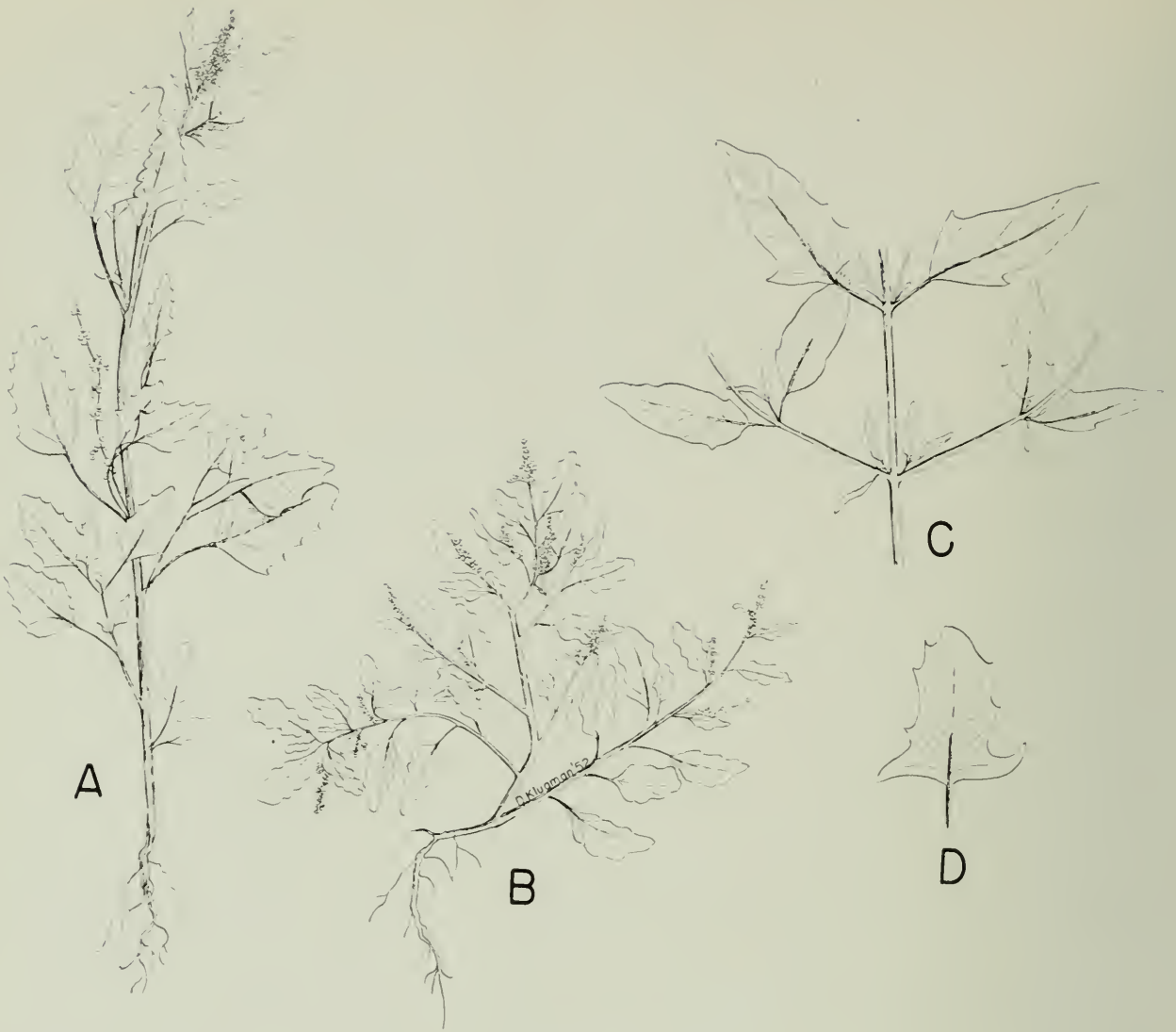


FIG. 12. A, Lamb's quarters. B, Oak-leaved goosefoot. C, Lower branches of spreading orache. D, Leaf of var. *hastata*.

THE GOOSEFOOT FAMILY (*CHENOPODIACEAE*)

Lamb's Quarters, *Chenopodium* sp. (Fig. 12A). Lamb's quarters is a common annual weed whose growth form is very variable. The stems are smooth and more or less purple-striped. The leaves have a whitish coating on the underside, and the margins are irregularly toothed. The greenish flowers are in clusters along a flowering-stalk originating at the junction of the stem and leaves. They are covered with the whitish particles which are typical of this plant. The seeds are shiny black, but commonly covered by a dull grey hull (Plate 18, no. 6).

Lamb's quarters is a host of the potato-aphid, spinach flea-beetle and spinach leaf-miner.

The **Oak-leaved Goosefoot**, *Chenopodium glaucum* L. (Fig. 12B). As the name implies, the leaf has a fancied resemblance to an oak leaf. The plant is low, and tends to spread over the ground. The stems are purple-striped, and the leaves have a whitish coating on the underside. The flowers have the same origin and appearance as in the preceding plant, but the flowering-stalks are much shorter. The seed is brownish in colour.

Spreading Orache, *Atriplex patula* L., and its variety *hastata* are often confused with lamb's quarters. The lower branches of orache, however, are nearly always opposite (Fig. 12C), and they never are in the lamb's quarters. The leaves are deep green and without the greyish coating on the under surface. The flowers lack the whitish particles, and the fruit appears triangular because of the bracts surrounding the seed (Plate 18, no. 7).

The variety *hastata* has broad, triangular and often toothed leaves, and they do not taper to the base, but are more or less square or slightly heart-shaped (Fig. 12D).

Russian Thistle, Saltwort, *Salsola kali* L. var. *tenuifolia* Tausch. (Fig. 13). This plant is low, bushy, hairy, and the stems are reddish-striped. The leaves are short, narrow, and sharp-pointed. The flowers are very small, green or pinkish and are in the axils of the leaves. The plant produces enormous numbers of seeds. In the fall the plants break off at the surface of the ground and are carried away by the wind, thus scattering the seeds. The seed (Plate 18, no. 9) is spiralled within its coating somewhat like a snailshell.

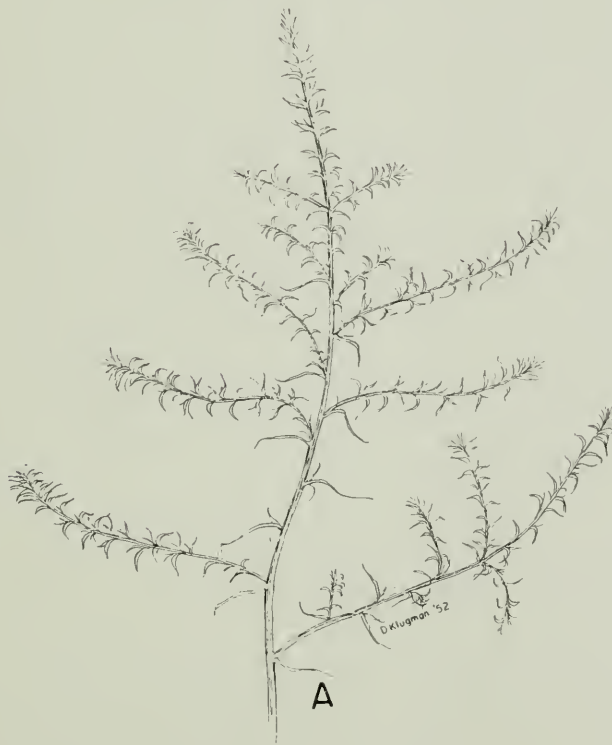


FIG. 13. Russian thistle.

THE AMARANTH FAMILY (AMARANTHACEAE)

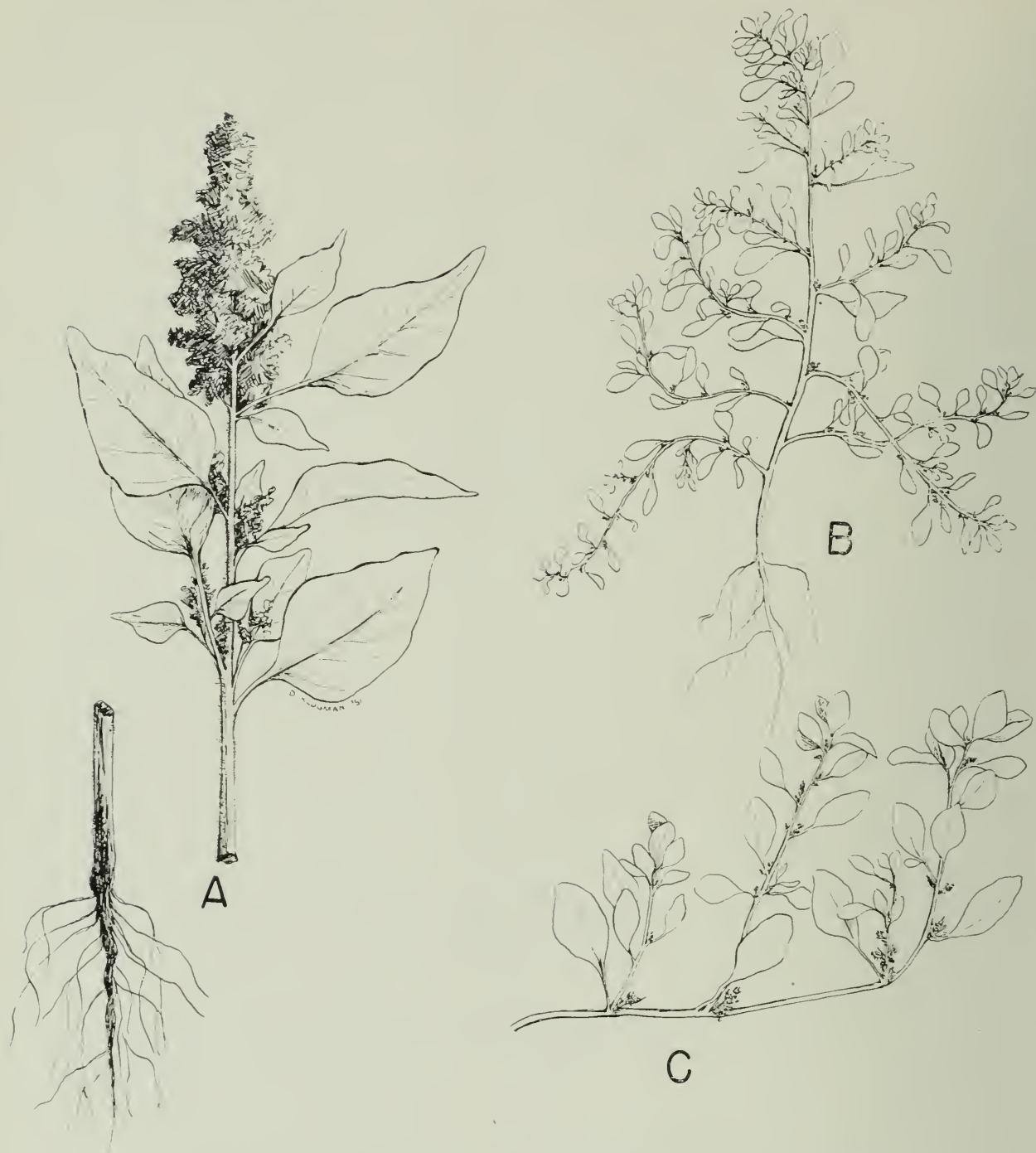


FIG. 14. A, Redroot pigweed. B, Tumbleweed. C, Prostrate pigweed.

Redroot Pigweed, *Amaranthus retroflexus* L. (Fig. 14A). This is a common annual weed in cultivated ground. The seeds may withstand long burial in the soil and germinate when the proper growing conditions are again presented. The top of the rather large root is red or pinkish. The stem is tall, much branched, rough and hairy. The leaves have long leaf-stalks, and the broad blades have a somewhat wavy margin. The flowers are small and grouped in dense clusters where the upper leaves join the stems. The numerous seeds are glossy-black, lens-shaped and with a narrow, thin margin (Plate 18, no. 10).

Green Amaranth, *Amaranthus hybridus* L., is similar in many respects to redroot pigweed but is smoother, deeper green, and the flowering branches are more spreading.

Tumbleweed, *Amaranthus albus* L. (Fig. 14B), is not as tall as the former species, but is much more branching and spreading. The stems are light green, and the leaves are broad at the tips and taper down to the leaf-stalk. The flowers are in small clusters where the leaves join the stem. In fall the plant may break off close to the ground and scatter its seeds as it is carried along by the autumn winds.

Prostrate Pigweed, *Amaranthus graecizans* L. (Fig. 14C), is often confused with tumbleweed, which it closely resembles. However, it spreads widely over the surface of the ground, and the stems may be purplish in comparison with the greenish-white stems of the tumbleweed.

The eradication of the pigweeds is important in the control of the spinach flea-beetle, tarnished plant-bug and spinach leaf-miner which find these plants suitable hosts.

THE PURSLANE FAMILY (*PORTULACACEAE*)

Common Purslane, Pusley, *Portulaca oleracea* L. (Fig. 15), is a prostrate annual with thick, smooth, fleshy leaves. It is branching, and often forms a dense mat on the ground. The stems are smooth and reddish. The small, yellow flowers develop in the axils of the leaves. The seed-capsules contain many flat, oval, black, rough-looking seeds (Plate 18, no. 11).



FIG. 15. Common purslane.

Because of its fleshy nature, it may live for some time and ripen seeds even after hoeing or pulling it out of the ground. It is very troublesome on rich garden land and muck soils.

THE PINK FAMILY (*CARYOPHYLLACEAE*)

Common Chickweed, *Stellaria media* L. (Fig. 16A), is a tender, low-lying matted plant, with small, star-like flowers (Fig. 16B) appearing from early spring to late fall. The opposite leaves are rather oval-shaped, and are comparatively long-stalked. The plant is a hardy annual, and may reproduce by seed or by rooting at the joints of the stems. The seeds are very small, and dull, reddish-brown in colour (Plate 18, no. 13).

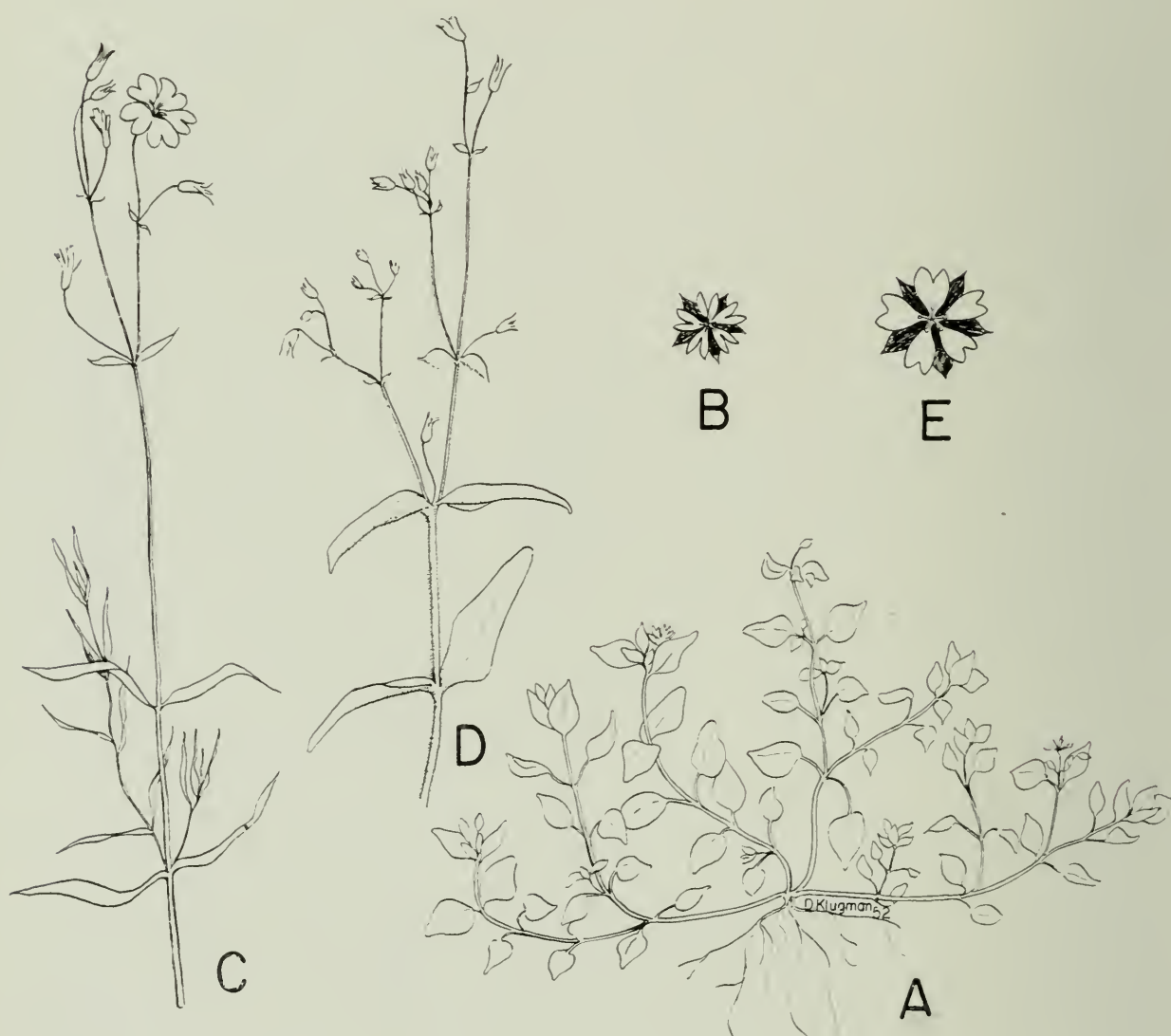


FIG. 16. A, Common chickweed. B, Flower. C, Field chickweed. D, Mouse-ear chickweed. E, Flower.

Mouse-Ear Chickweed, *Cerastium vulgatum* L. (Fig. 16D), is a perennial. It has more or less oblong, densely-hairy leaves placed far apart on the stems. The upper leaves are without leaf-stalks. The petals are about the same size as the green bracts below them (Fig. 16E), and the seed-pods are long and curved at maturity. The seeds are brownish, more or less triangular and with small tubercles (Plate 18, no. 14).

The spinach leaf-miner is commonly found on the chickweeds.

Field Chickweed, *Cerastium arvense* L. (Fig. 16C). A perennial, with upright, very branching stems, and narrow, pointed leaves clustered near the base of the plant. The flowering branches are on long, almost leafless stalks. The white flowers are about 1 inch across, and the petals are longer than the green bracts beneath them.

Bladder-Campion, *Silene cucubalus* Wibel. (Plate 3), is a perennial, spreading by seed and shoots from the deep, wide-spreading crown. The whole plant is smooth with a whitish bloom (glaucous). The opposite, smooth leaves are more or less elliptical, and have no leaf-stalk. The most interesting part of the plant is the pinkish or greenish-white, much veined, bladdery-calyx surrounding the white, or sometimes pinkish petals. The seed-pod is much smaller than the calyx and enclosed within it. Seed (Plate 19, no. 2).

White Cockle, *Lychnis alba* Mill. (Plate 4). A biennial or short-lived perennial, with the typical swollen joints and opposite leaves of the pink family. The plant is dark green and hairy, tall and branching. When the plants are in bloom, it is observed that some plants have only male flowers (staminate), while others have only female flowers (pistillate). The petals are white, or sometimes pinkish. The seed-pods become much inflated, filling the calyx when mature. When the pods split open, they have 10 teeth. Seed (Plate 19, no. 1).

Night-Flowering Catchfly, Sticky cockle, *Silene noctiflora* L., is usually an annual, and has the same general plant characteristics as the white cockle, but it has many sticky hairs covering the stems, leaves and flowers. The petals are white, and both sexes are present in the same flower. The pods are similar to the white cockle, but usually have only 6 teeth when they burst open. The seeds (Plate 19, no. 4) are similar to the white cockle, but are slightly darker in colour.

Purple Cockle, *Agrostemma githago* L., may be of local occurrence in the province. Its densely-hairy stems and leaves, rather large purple flowers and long calyx lobes are characteristic features. Purple cockle seeds may sometimes be found in feed grain. These are injurious to poultry. Seed (Plate 18, no. 15).

Bouncing-Bet, Soapwort, *Saponaria officinalis* L. (Fig. 17), is a common plant along roadsides, and occasionally in fields. It is a perennial which develops in clumps. All parts of the plant are smooth. The calyx is much more slender and tube-like than that of the cockles. The flowers are pinkish or rose coloured. Seed (Plate 19, no. 5).

BLADDER CAMPION

SILENE

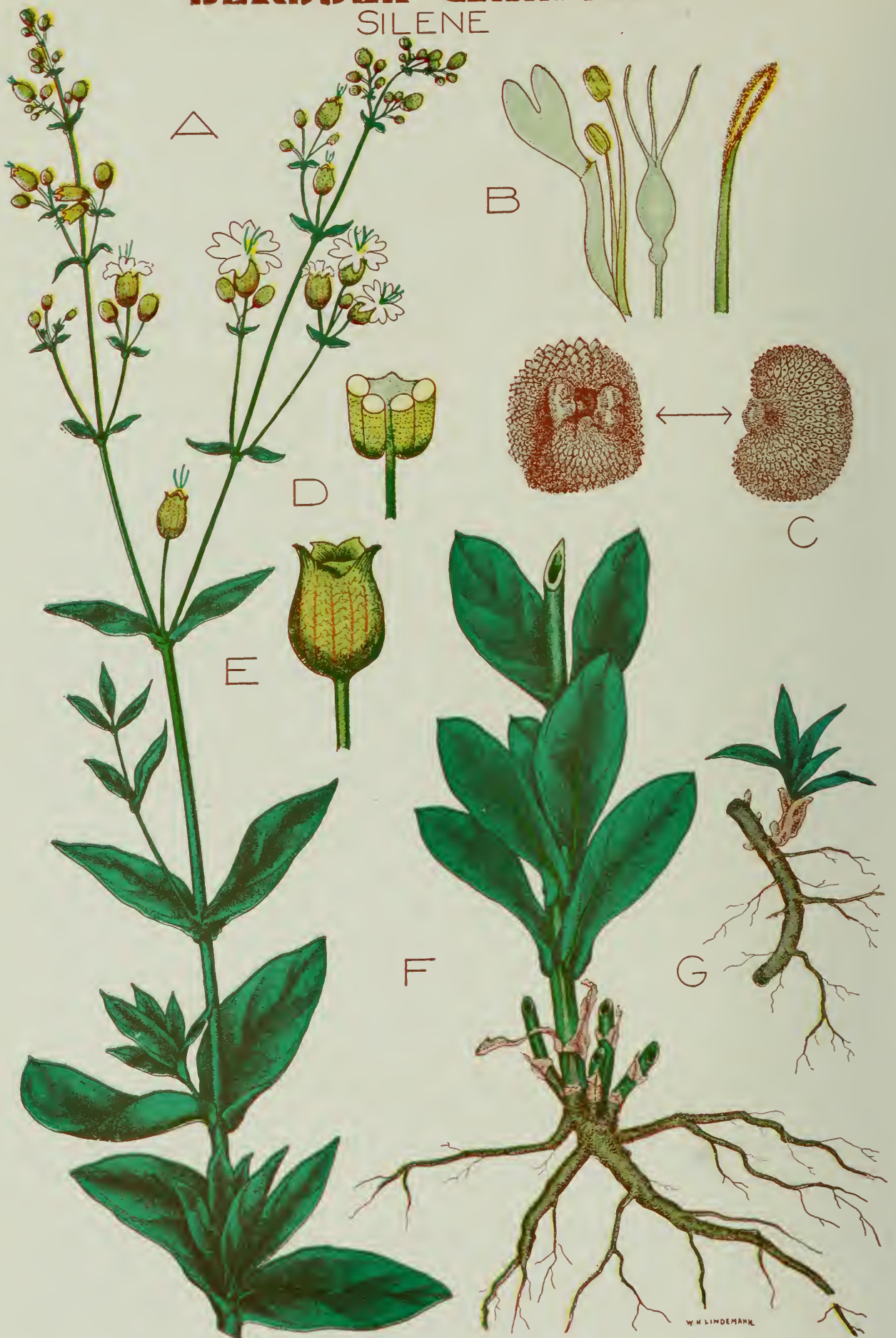


PLATE 3. Bladder-campion.

WHITE COCKLE

LYCHNIS ALBA



PLATE 4. White cockle.



FIG. 17. Bouncing-bet.



FIG. 18. Tall buttercup.

THE BUTTERCUP FAMILY (*RANUNCULACEAE*)

Buttercups are not usually persistent in cultivated ground. The pretty, deep-yellow flowers of the **Tall Buttercup**, *Ranunculus acris* L. (Fig. 18), are a common sight in pastures and deserted land, particularly if the soil is moist. Fruit (seed) (Plate 19, no. 7).

The small **Creeping Buttercup**, *Ranunculus repens* L., is often a pest in lawns and gardens. It has numerous fibrous roots, and the stems creep along the ground, rooting at the nodes. The flowers and leaves are similar to the common buttercup.

THE BARBERRY FAMILY (*BERBERIDACEAE*)



FIG. 19. A, Twig of common barberry. B, Leaf showing cluster cups of stem rust. C, Single leaf of Japanese barberry. D, Twig of Japanese barberry.

Common Barberry, European barberry, *Berberis vulgaris* L. (Fig. 19A), is a perennial shrub 3 to 8 feet high, and reproducing by seeds and by shoots from the wide-spreading roots. The alternate leaves are broader at the tips than at the bases, and have finely-toothed margins with the teeth terminating in short spines. The leaves are grayish-green beneath. On some of the younger branches these leaves may be reduced to 3-parted spines. The numerous, yellow flowers hang in long clusters (racemes) from the axils of the leaves. By autumn these flowers have matured to bright red, elliptical berries.

The barberry is important as a host-plant for one of the stages of the stem-rust of grain, and it should therefore be eradicated. Fig. 19B shows the underside of a barberry leaf with cluster cups of this stage of the rust.

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The Japanese Barberry, *Berberis thunbergii* DC. (Fig. 19D), should not be confused with the common barberry and is *not* a host plant for the stem-rust. It can be distinguished by its smaller leaves with smooth margins, and the spines are only 1-pronged instead of three. The flowers vary from 1 to 5 in a cluster (umbel) at the end of a single stalk.

THE MUSTARD FAMILY (*CRUCIFERAE*)

Pennycress, Stinkweed, *Thlaspi arvense* L. (Fig. 20), is a winter annual with a branching taproot, and with simple or branching, smooth stems, 8 to 24 inches high. The lowest leaves have long leaf-stalks and smooth margins. The upper leaves have no leaf-stalks, but are attached directly to the stem at the arrow-shaped base, and have toothed margins. The flowers are numerous, small and white. The seed-pods are oval and flat, about one-half inch in diameter with large wings and a rather deep U- or V-shaped notch at the upper end. They stand erect, and almost parallel to the stem. Seed (Plate 19, no. 9).



FIG. 20. Pennycress.

Field Peppergrass, *Lepidium campestre* R. Br. (Fig. 21A), is a biennial found commonly in cultivated ground, roadsides and waste places. In the fall the plant has a rosette or cluster of stalked, deeply-lobed or toothed leaves close to the ground. In spring one or more very leafy stems form. The stem-leaves may be parallel-sided and pointed, or broader at the bases than at the tips; the margins are toothed, and the leaves are attached to the stem by an arrow-shaped clasping base. Both the stems and leaves have short, fine hairs. The numerous, small, white flowers have short stalks, and are distributed along the stem for some distance (racemes). The seed-pods are oval, boat-shaped (rounded below, and hollowed out above) about one-quarter inch long with a small notch at the end, and a slightly winged margin. Seed (Plate 19, no. 10).

Common Peppergrass, *Lepidium densiflorum* Schrad. (Fig. 21B), is a winter annual. The basal leaves are coarsely toothed, and the plant often has a bushy appearance. The stem-leaves are not as crowded as in the previous species, and they are toothed only near the tips. The flowers are small, have no petals, and usually only two stamens. The seed-pods are about half the size of the field peppergrass, but are flat. Seed (Plate 19, no. 11).

The peppergrasses are known to be a host of the melon-aphid.



FIG. 21. A, Field peppergrass. B, Common peppergrass.

Shepherd's Purse, *Capsella bursa-pastoris* (L.) Medic. (Fig. 22). A very common, widely distributed winter annual. On the ground is found a rosette of leaves which may vary considerably in form, but most frequently they are lobed. The slender stems are from a few inches to 18 inches high. The stem-leaves are slender, arrow-shaped, without leaf-stalks, and often clasping the stem. The flowers are small and white, and the plant keeps blooming for a long time. The seed-pods are small, heart-shaped, or, as the name implies, purse-shaped, with the stigmas forming the little purse fasteners. Seed (Plate 19, no. 13).

Shepherd's purse is known to harbour the melon-aphid and the potato-aphid.

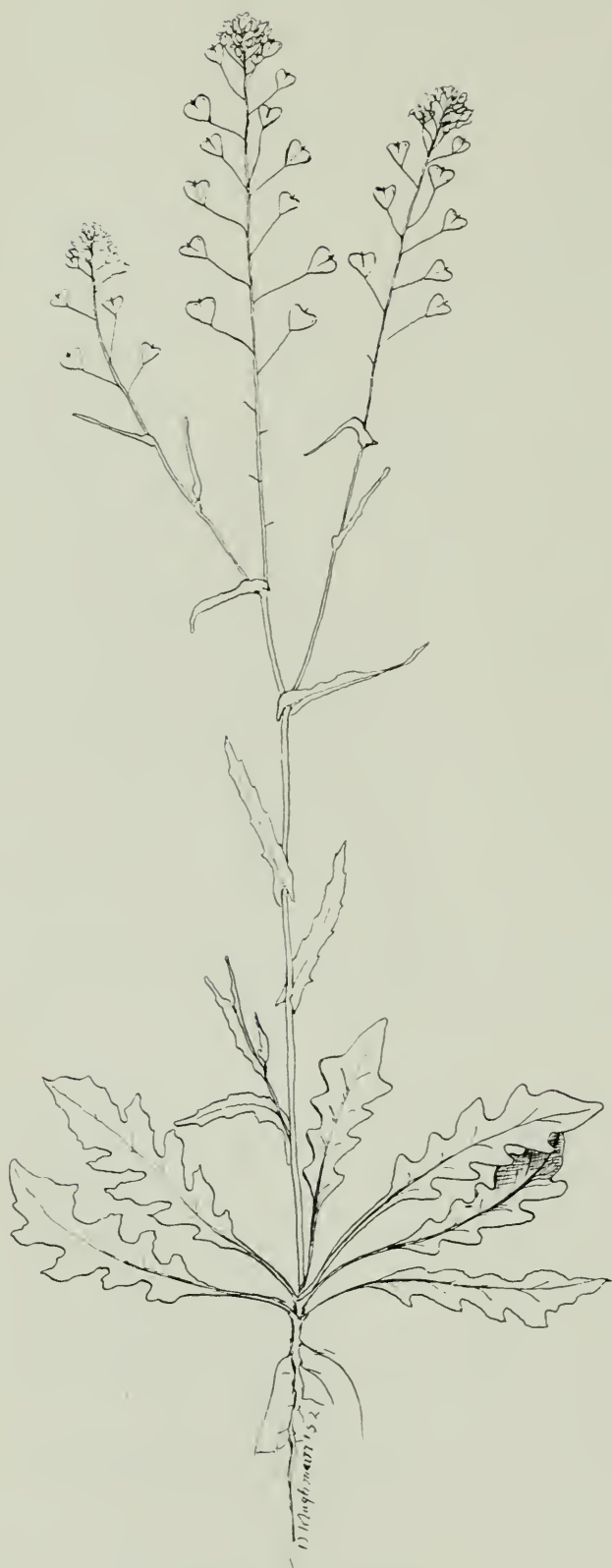


FIG. 22. Shepherd's purse.



FIG. 23. Small-seeded false flax.

Small-seeded False Flax, *Camelina microcarpa*, Andr. (Fig. 23). This frequent inhabitant of grainfields is a rather tall biennial. The lower leaves are long-elliptical with wavy-toothed margins. The upper leaves are smaller, wavy-margined, arrow-shaped and almost clasping the stem by the heart-shaped base. The lower part of the stem and the leaves have numerous stiff hairs, which when seen through a lens are observed to be forked. The flowers are small, yellow, and the seed-pods are oval, with a prominent margin and a point on the outer end. The pods contain several seeds. Seed (Plate 19, no. 14).

This plant may be confused with the **Large-seeded False Flax**, *Camelina sativa* (L.) Crantz, which has larger seed-pods and larger seeds (Plate 19, no. 15): Also with **Ball Mustard**, *Neslia paniculata* (L.) Desv. which has star-shaped hairs, and the one-seeded pods have very distinct network-like markings (Plate 19, no. 16).

Wild Mustard, Charlock, *Brassica kaber* (DC.) L. C. Wheeler var. *pinnatifida* (Stokes) L. C. Wheeler (Fig. 24), is a much branched, rough, hairy-stemmed annual. The lower leaves are deeply dissected or lobed. The upper ones are not lobed, but coarsely toothed and the leaf-stalks are very short. The flowers are light yellow and comparatively large. The smooth, or almost smooth seed-pods are quite distinctive with their knotty appearance and angular beak about one-third the length of the pod. This beak usually contains a seed. Seed (Plate 20, no. 1).

Indian Mustard, *Brassica juncea* Cosson, is a winter annual with a slight whitish cast or bloom on the stem and leaves. The lower leaves are lobed and somewhat hairy, but the upper are not lobed, and taper toward the base, and may be without hairs. The margin of the upper leaves may be wavy or have shallow, blunt lobes. The seed-pods are 1 to 3 inches long, and have a prominent beak about one-quarter the length of the pod. There is no seed in the beak such as in the wild mustard. Seed (Plate 20, no. 2).

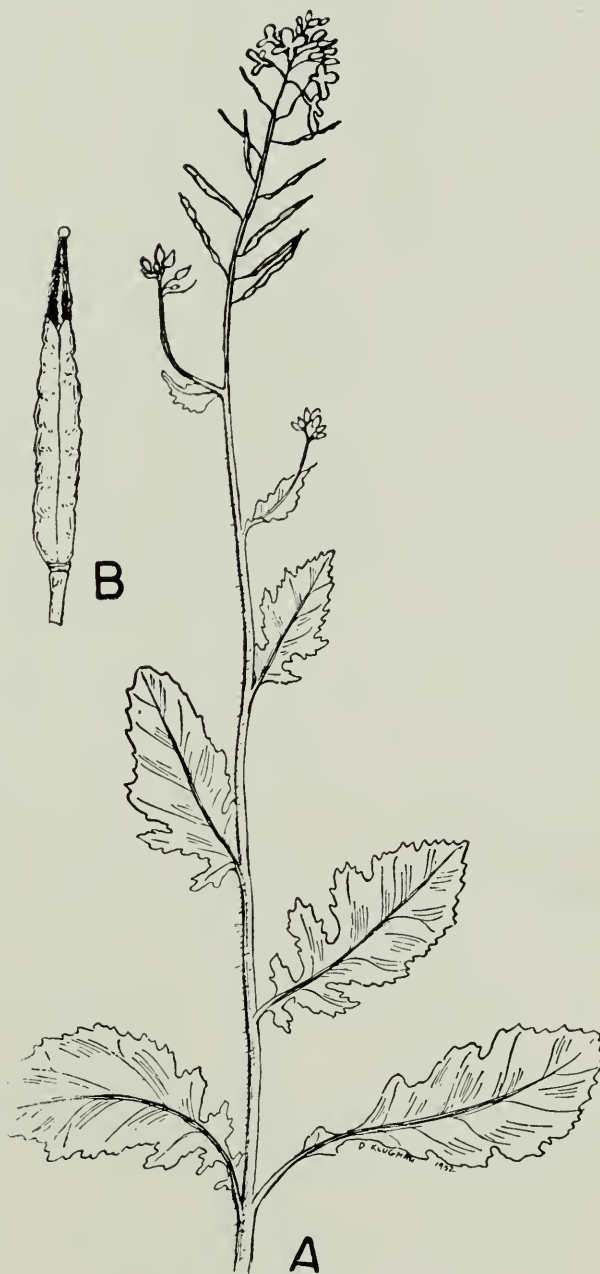


FIG. 24. Wild mustard.

Mustards are hosts to the imported cabbage-worm, cabbage-looper, cabbage-aphid, and the striped flea-beetle. The common mustard is a frequent host for the turnip-beetle. Early in the season this insect develops on common mustard and later infests the turnip crop.

Hedge Mustard, *Sisymbrium officinale* var. *leiocarpum* DC. (Fig. 25), is an annual weed with branching, roughened stems. The leaves are coarsely lobed, and the lobes are toothed. The deep yellow flowers are close together along the upper branches. The smooth pods lie close to the branches, and are sharply pointed. Seed (Plate 20, no. 6).



FIG. 25. Hedge mustard.

Tumbling Mustard, *Sisymbrium altissimum* L. (Fig. 26). An annual or winter annual. The plant height may vary from 1 to 4 feet, and it may be single-stemmed or quite branching. The stem is light green in colour and hairy, particularly at the base. The lower leaves are large, and cut into large segments, but the upper leaves are very finely divided. The flowers are light yellow, and the seed-pods are long, narrow and spreading. Seed (Plate 20, no. 7). In the West when the plants are mature, they break off at the base and roll over the ground distributing the seeds.

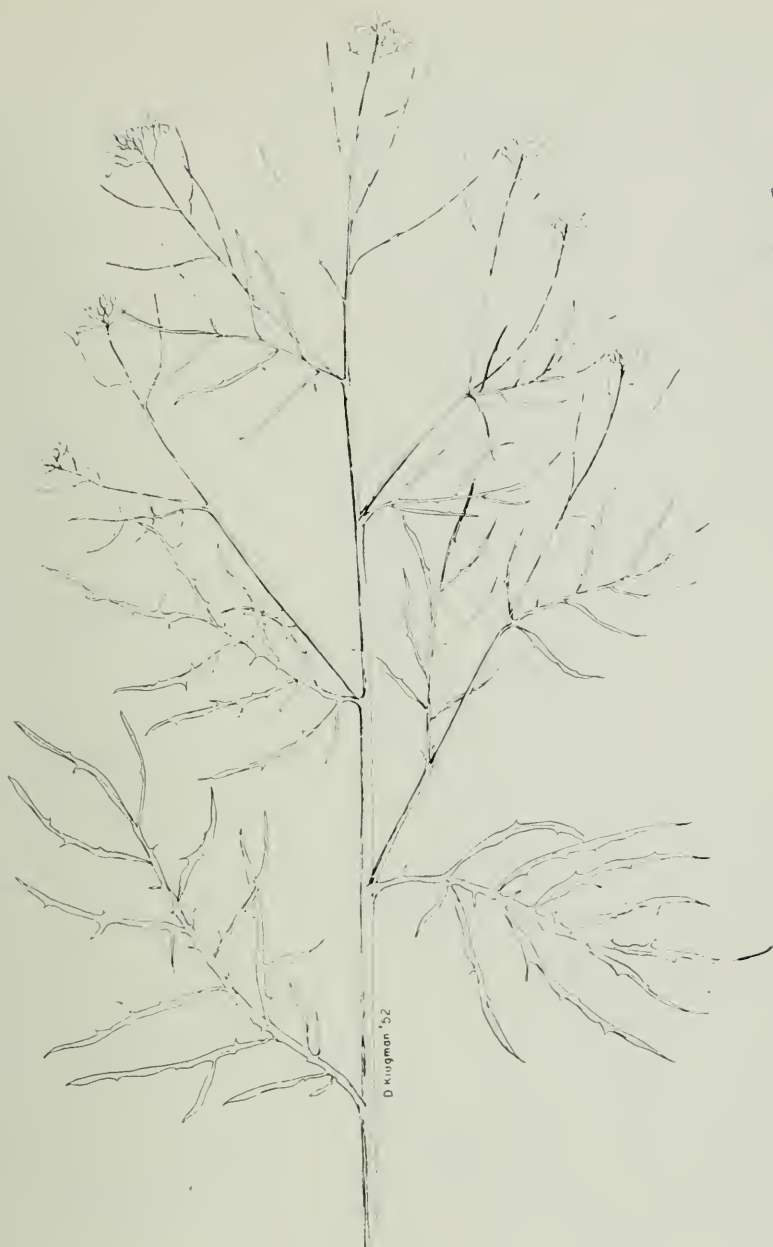


FIG. 26. Tumbling mustard.



FIG. 27. Wormseed mustard.

Wormseed Mustard, *Erysimum cheiranthoides* L. (Fig. 27), is a winter annual, flowering from spring till fall. It may be single-stemmed or branching. The leaves are elliptical, with short leaf-stalks or none, and roughened by 3-pronged hairs. The whole plant may have a slightly grayish colour. The flowers are small, yellow and on thin stalks. The seed-pods are about 1 inch long, somewhat four-sided. Seed (Plate 20, no. 9).

A very similar looking mustard, *Erysimum hieracifolium* L., is also found, particularly in some eastern counties. It is a biennial or perennial, with mostly four-pronged hairs on the upper surface of the leaf. The petals are a little larger and lighter yellow in colour. The seed-pods lie close to the stem.

Flixweed, *Descurainia sophia* (L.) Webb., is an annual or biennial weed. It is a simple or much branched plant with finely divided, grayish-green leaves. The flowers are small, and the petals are greenish-yellow. The seed-pods are very slender and 1 inch or more long. Seed (Plate 20, no. 8).



FIG. 28. Yellow rocket.

Yellow Rocket, Winter-cress, *Barbarea vulgaris* R. Br. (Fig. 28), may be a biennial or short-lived perennial. It is from 1 to 2 feet high with smooth, simple or branching stems giving a clustered appearance. The lower leaves have long leaf-stalks, a few pairs of small lateral lobes, and a large, terminal lobe. Toward the top of the stem, the leaf-stalks become shorter, and the leaves may eventually clasp the stem. The terminal lobes of the upper leaves are coarsely toothed. The leaves have a dark, glossy-green colour. The numerous flowers are small, bright yellow and quite showy. The seed-pods are somewhat four-angled, and are about 1 inch in length. Seed (Plate 20, no. 10).

At least 2 varieties are common: The seed-pods of the typical species are closely appressed to the stem; those of the other variety are spreading as shown in Fig. 28.

THE ROSE FAMILY (*ROSACEAE*)



FIG. 29. A and B, Plant and fruit of rough-fruited cinquefoil. C, D, E, Leaf, flower and fruit of rough cinquefoil. F, Silvery cinquefoil.

Hawthorn, Thorn-apple, *Crataegus* species. The shrubs of hawthorn are becoming a common sight in cleared areas, pastures, and abandoned fields in southern Ontario. They have simple leaves often with sharply-toothed margins. They produce many white flowers in the late spring or early summer, and in the fall they may be loaded with usually reddish, small, apple-like fruit.

The shrubs often become infected with rusts which in turn may attack mountain ash, pear, quince and apple. Hawthorns also may serve as a source of bacteria which cause fireblight of apple and pear. In some instances the shrubs may harbour the apple-maggot. All *Crataegus* species in the vicinity of commercial pear or apple orchard should be removed.

Rough-fruited Cinquefoil, *Potentilla recta* L. (Fig. 29A), is a perennial weed usually in uncultivated land. The rather tough, branching, hairy stems may be 1 to 2 feet high. The long-stalked leaves are five to seven parted from one point, and are quite hairy. The flowers resemble in structure those of the strawberry or raspberry, but the petals are a pale, sulphur-yellow, and the fruit consists of a head of dry seed-pods. Fruit (seed) (Fig. 29B and Plate 20, no. 11).

Potentilla intermedia L., resembles very closely the rough-fruited cinquefoil. It is less robust and has smaller and darker yellow flowers. It has been observed most frequently in the eastern counties.

A somewhat similar species is the **Rough Cinquefoil**, *Potentilla norvegica* L. It is annual or biennial, and flowers later in the year than the rough-fruited cinquefoil. The leaves have only three leaflets (Fig. 29C). The yellow petals are smaller than those of the previous species, and scarcely as long as the green bracts (calyx) under them (Fig. 29D). Fruit (seed) is shown in Fig. 29E and Plate 20, no. 12.

Silvery Cinquefoil, *Potentilla argentea* L. (Fig. 29F), is often a reclining plant, and found most frequently in dry soils. The stems are densely covered with white hairs, and the leaflets (usually 5) are dark green above and white-woolly on the under surface. The edges of the leaflets are slightly rolled toward the lower surface. The small, yellow flowers are in leafy clusters at the ends of the branches.

The cinquefoils in or near strawberry patches are often hosts of the strawberry-weevil.

THE LEGUME FAMILY (LEGUMINOSAE)



FIG. 30. Black medick.

Black Medick, Yellow trefoil, *Medicago lupulina* L. (Fig. 30), is a winter annual widely distributed in fields, gardens and lawns. The branching, hairy stems, unless supported by some means, trail along the ground. The leaves have three leaflets which are almost oval in shape or broadest at the tips. The margins of the leaflets are toothed near the tips, and there is a notch at the tip in which is a short spine. The yellow flowers are in small clusters, and are, in general, similar to those of the peas and beans. The seed-pods are black, slightly coiled, and have prominent ridges (Plate 20, no. 14).

Tufted Vetch, Bird vetch, Tare, *Vicia cracca* L. (Fig. 31), is one of the perennial vetches occurring in open fields and along roadsides. It can be identified quickly by the rootstocks which are not found in other common vetches. It has a weak, hairy, reclining stem, and the leaves have many leaflets. The terminal leaflet is modified to form a branching tendril by means of which the plant may attach itself to supporting objects. The flowers arise from the junction of the stems and the leaf-stalks, and the many, small, pea-like, purple flowers are on one side of the flowering stalk. The small pea-like pods are about one-quarter inch wide and contain 6 to 8 seeds.

Tufted vetch is often confused with **Hairy Vetch**, *Vicia villosa* Roth. The root of this latter species, however, is not perennial. The plant has more spreading hairs, and the flowers are fewer in number and larger than in the former species. The seed-pods are broader and longer than those of tufted vetch. It is



FIG. 31. Tufted vetch.

often introduced as a pasture and fodder plant, or for green-manure, and being an annual may reproduce each year by its seeds once it has been established in a field.

Narrow-leaved Vetch, Wild tare, *Vicia angustifolia* Reich., has the same general characteristics as tufted vetch. It is an annual or winter annual, almost hairless, has fewer leaflets, and these are longer and more tapering than those of tufted vetch. The purple flowers, without stalks (sessile), develop in pairs at the junction of the upper leaves and the stem. The ripe seed-pods are about 2 inches long, black and contain 10 to 16 seeds.

These members of the legume family are hosts of the pea-aphid, although some of the cultivated species, such as alfalfa, may be more important hosts.

THE SPURGE FAMILY (*EUPHORBIACEAE*)

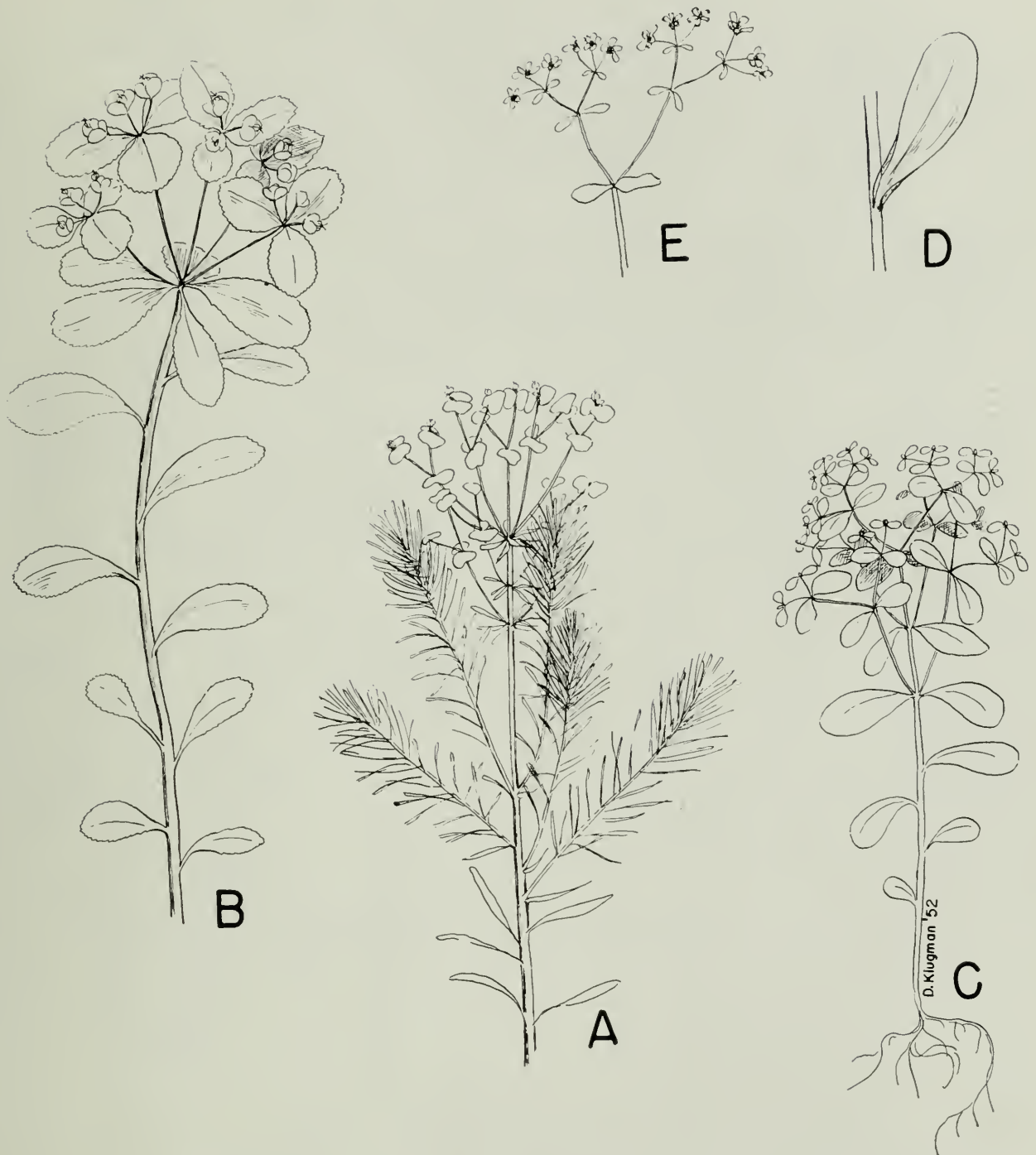
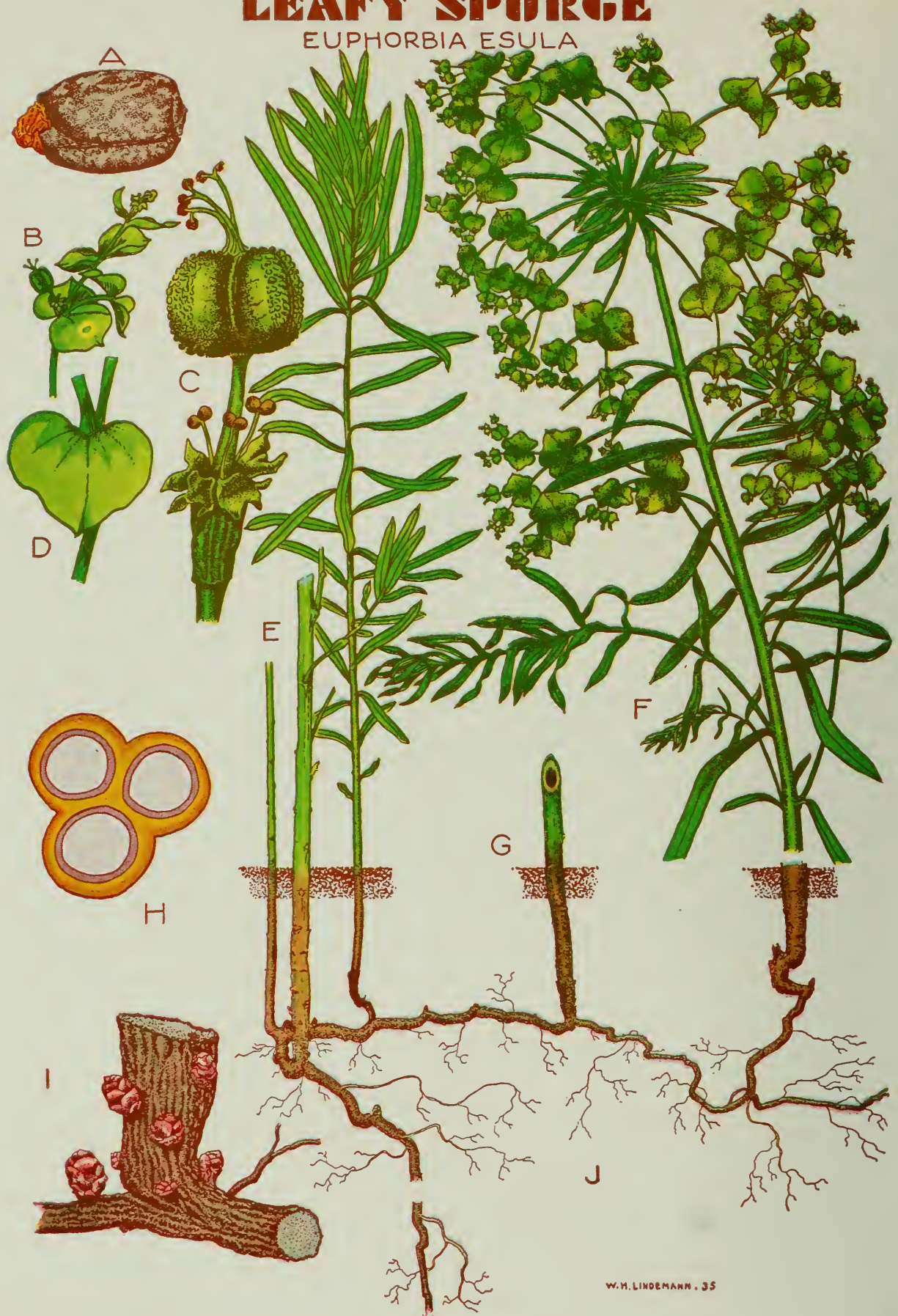


FIG. 32. A, Cypress spurge. B, Sun spurge. C, Petty spurge.
D, and E, Leaf and flowers of flowering spurge.

Cypress Spurge, *Euphorbia cyparissias* L. (Fig. 32A). The above ground structure may originate from seeds or from the perennial rootstock. The plant has a bushy appearance because of the low branching stems and the many closely-crowded, smooth, narrow leaves. The flower-stalks occur in clusters (umbels) from one point at the top of the stem and branches, or from the axils of the leaves. At the base of the umbels is a small rosette of leaves. Each stalk of the umbel branches. Where it divides, and also under each flower-cluster, is a pair of roundish leaves.

LEAFY SPURGE

EUPHORBIA ESULA



W.H. LINDEMANN. 35

PLATE 5. Leafy spurge.

POISON IVY

RHUS TOXICODENDRON.

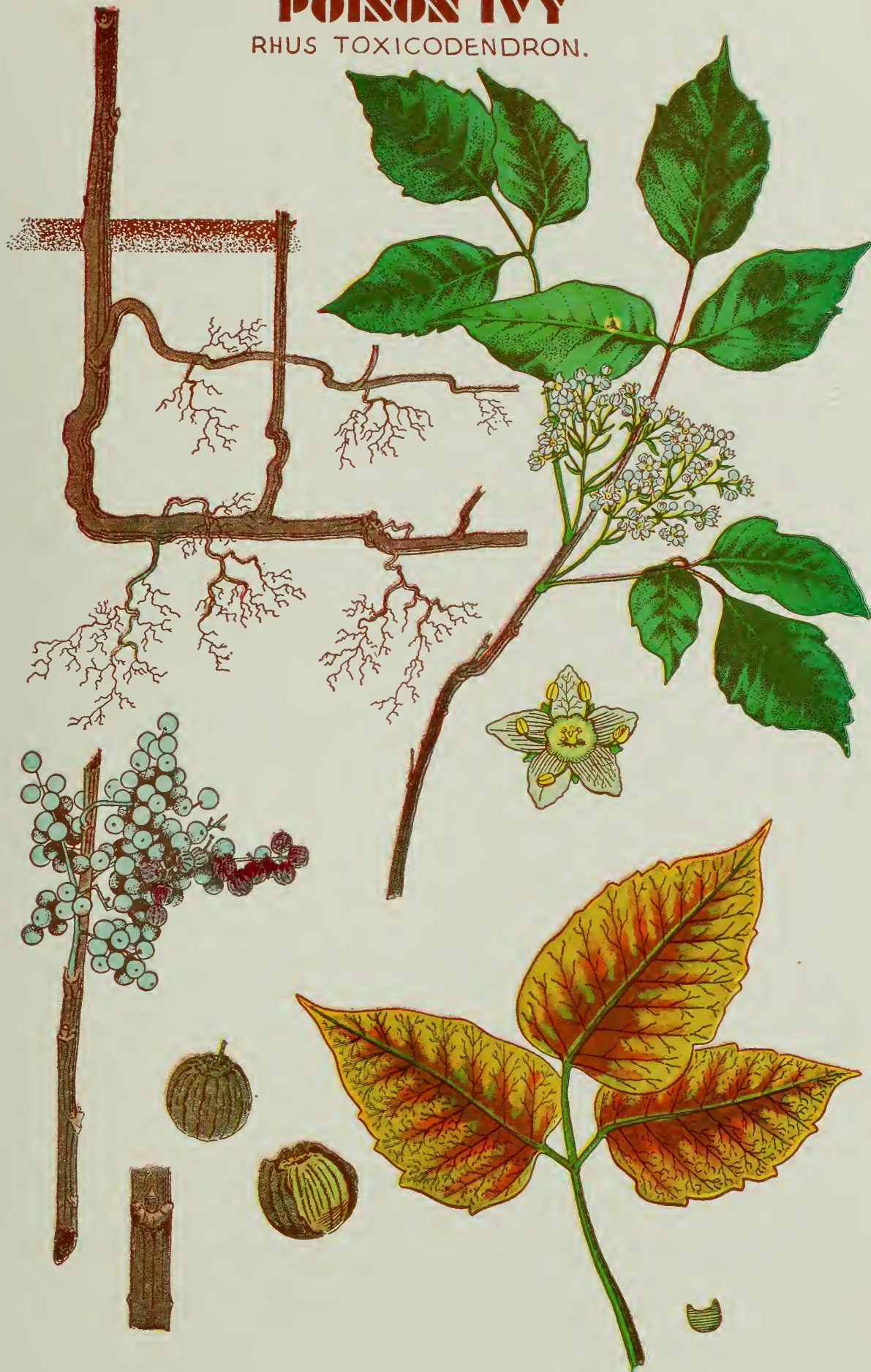


PLATE 6. Poison ivy.

Leafy Spurge, *Euphorbia esula* L. (Plate 5). It is a deep-rooted perennial and grows from 1 to 3 feet tall. It reproduces by seeds and rootstocks. The leaves are long and linear, and not so crowded as in the Cypress spurge. The bracts under the umbel are larger, and those under the flower may be lighter coloured than those of Cypress spurge. Both the leaves and the bracts may have a slightly whitened appearance (glaucous). Seed (Plate 20, no. 15).

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Sun Spurge, *Euphorbia helioscopia* L. (Fig. 32B), is an annual, and is easily distinguished from the preceding species by the broad-tipped leaves which taper to a short leaf-stalk, and the small teeth around the margin. The leaves at the base of the umbels and the flower cluster are even broader than the stem leaves. The umbels have only 3 to 5 divisions in comparison with the numerous divisions of the previous species.

Petty Spurge, *Euphorbia peplus* L. (Fig. 32C), is the smallest species of those described here, growing only 6 to 12 inches high. It is an annual, and has oval leaves tapering to thin leaf-stalks. The leaves of the umbels and flower clusters have short stalks or none. The flowers are small and inconspicuous.

Flowering Spurge, *Euphorbia corollata* L., is common in some areas, and persists by perennial rootstocks. The leaves are rather long and more or less elliptical in shape (Fig. 32D). The bracts of the flowering branches are much smaller than the stem-leaves, and the small, petal-like structures immediately around the flowers are white, giving the plant a distinctive appearance (Fig. 32E).

In southwestern Ontario, the **Broad-leaved Spurge**, *Euphorbia platyphylla* L., may be seen frequently. The stem-leaves have a heart-shaped indentation at the base, and are hairy on the under surface.

THE CASHEW FAMILY (ANACARDIACEAE)

Poison Ivy, *Rhus radicans* L. (Plate 6). A perennial, shrubby plant found in a variety of habitats. It spreads by seeds and by shoots from the creeping rootstocks. The stem may be short, or it may climb over fences and trees. The leaves are alternate on the stems, and have three leaflets which are variable in appearance, but most frequently have wavy or toothed margins. The plants may be hairy or almost smooth. The flowers are in clusters on long stalks from the junction of the leaf-stalks and the stems. They are greenish coloured and produce a whitish or yellowish fruit.

All parts of the plant are apparently poisonous to many people, causing irritating inflammation and blisters on the skin. Many remedies have been suggested for poison ivy infection, and probably the cures vary with the individual. If infection has occurred, it is best to get advice from a physician.

If one has come in contact with poison ivy, a recommended first aid treatment is a thorough washing with a strong soap solution of the parts of the body that have come in contact with the plant.

Poison ivy can be distinguished very easily from Virginia creeper. It has only three leaflets whereas Virginia creeper has five.

THE BUCKTHORN FAMILY (*RHAMNACEAE*)



FIG. 33. A, Branch of common buckthorn. B, Fruiting branch. C, Leaf of alder buckthorn.

Common Buckthorn, *Rhamnus cathartica* L. (Fig. 33A), is a shrub varying considerably in size. It is very bushy, and the shoots terminate with a sharp spine. The leaves are opposite, elliptical in outline, smooth, and with toothed margins. The main veins do not extend to the edge of the leaf, but curve upwards towards the tip. The flower clusters are at the junction of the twigs and the leaves, and the flowers are small and greenish. The fruit (Fig. 33B), when fully mature, is bluish to nearly black and very bitter to the taste.

The barberry is a host plant for one of the stages of the stem-rust of grain. In a similar manner, the common buckthorn is a host plant for the leaf-rust of oats. In the spring the cluster cup stage of this disease develops on the under side of the buckthorn leaves. From these cluster cups the disease spreads to the oats. See Extension Circular No. 49, Ontario Department of Agriculture.

A second introduced species, the **Alder Buckthorn**, *R. frangula* L., is common in some areas, particularly in swampy ground. The leaves are elliptical or slightly broader above the middle of the blade (Fig. 33C). The margins are without teeth, and the blades have heavy parallel veins. It lacks the thorns at the ends of the twigs. The fruit is black and bitter.

THE MALLOWS (MALVACEAE)

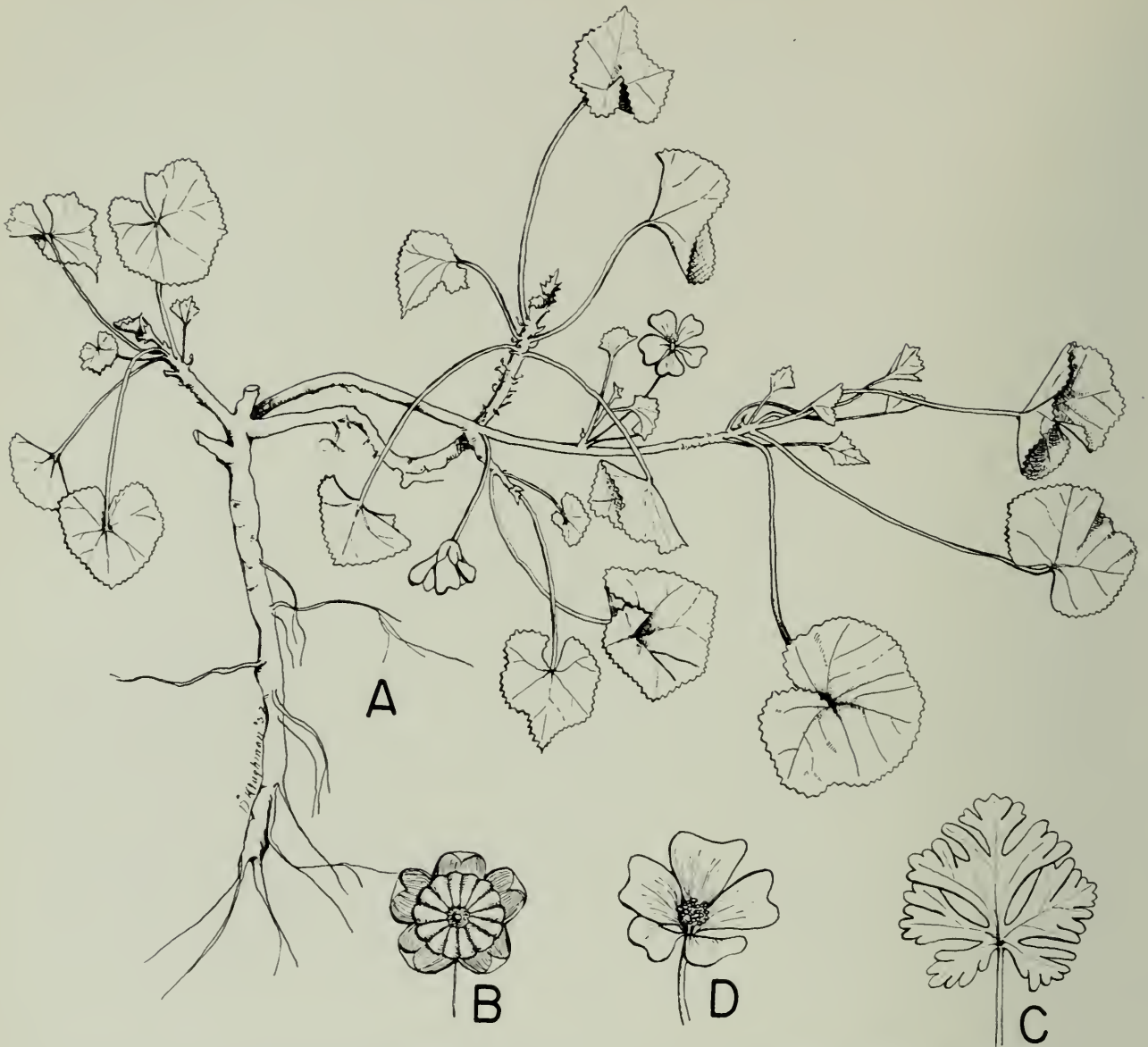


FIG. 34. A, Round-leaved mallow. B, Fruit. C, Leaf of musk mallow. D, Flower.

Round-leaved Mallow, Cheeses, *Malva neglecta* Wallr. (Fig. 34A). This is an annual or biennial weed found in many different habitats. The stems trail along the ground, and have alternate, long-stalked, hairy, rounded leaves with heart-shaped bases. The small hollyhock-like flowers originate where the leaves join the stems, and are white or slightly pinkish. The fruit, like that of the hollyhock, consists of a ring of small triangular sections (Fig. 34B). Fruit (seed) (Plate 20, no. 16).

Malva rotundifolia L. is similar to the above species, but the flowers are much smaller; the petals are about as long as the sepals, and the base of the petals have hairs on them. It has not the wide distribution of *Malva neglecta*.

Musk Mallow, *Malva moschata* L., is a perennial, erect plant found often in formerly cultivated fields and along roadsides. It has deeply divided leaves with each division also deeply cut (Fig. 34C). The flowers are much larger than in the previous species, being about 2 inches in diameter. They may be white or pink (Fig. 34D). The fruit is also similar to that of hollyhock. This plant is frequently grown in gardens as an ornamental.

Flower-of-an-Hour, *Hibiscus trionum* L. (Fig. 35). In some sections of southwestern Ontario this is becoming a troublesome weed in home gardens and in market gardens. It is a low, branching, hairy annual. The alternate leaves have long leaf-stalks, and the leaf-blades are three-parted. Each leaf-segment is coarsely toothed or lobed. There are a number of hairy bracts below the flower, and the hairy calyx is distinctly marked with dark lines. The petals are light yellow with a purple area at the base of each petal. The fruit is surrounded by the calyx which at maturity becomes swollen or bladder-like.



FIG. 35. Flower-of-an-hour.

COMMON ST. JOHN'S - WORT



PLATE 7. St. John's-wort.

Velvet-Leaf, *Abutilon theophrasti* Medic. (Fig. 36), is also becoming a frequent weed in southwestern Ontario. It is a stout, much branched annual, 3 to 4 feet in height, and the whole plant has a velvety feeling. The leaves are large, heart-shaped, sharply pointed at the tip, and slightly toothed on the margins. The yellow flowers originate in the axils of the leaves, and are about an inch in diameter. The fruiting-head consists of numerous divisions which form a ring of seed-pods.



FIG. 36. Velvet-leaf.

THE ST. JOHN'S - WORT FAMILY (*GUTTIFERAE*)

St. John's - Wort, *Hypericum perforatum* L. (Plate 7). This perennial weed reproduces by seeds and rootstocks. It has a very branching, smooth stem, and a bushy top. The opposite, smooth-margined leaves are elliptical in shape, with leaf-stalks, and if one holds a leaf toward the light, it appears to have numerous holes, giving a perforated appearance. The flowers are quite numerous and bright yellow with black dots around the edges of the petals. It has a large number of stamens in 3 to 5 clusters. Seed (Plate 20, no. 17).

If this plant is eaten in quantity by animals, it produces an irritation of the skin surface when the animals are exposed to bright sunlight. This occurs most frequently on hairless or unpigmented portions of the body. For details see bulletin on poisonous plants.

THE PARSLEY FAMILY (UMBELLIFERAE)

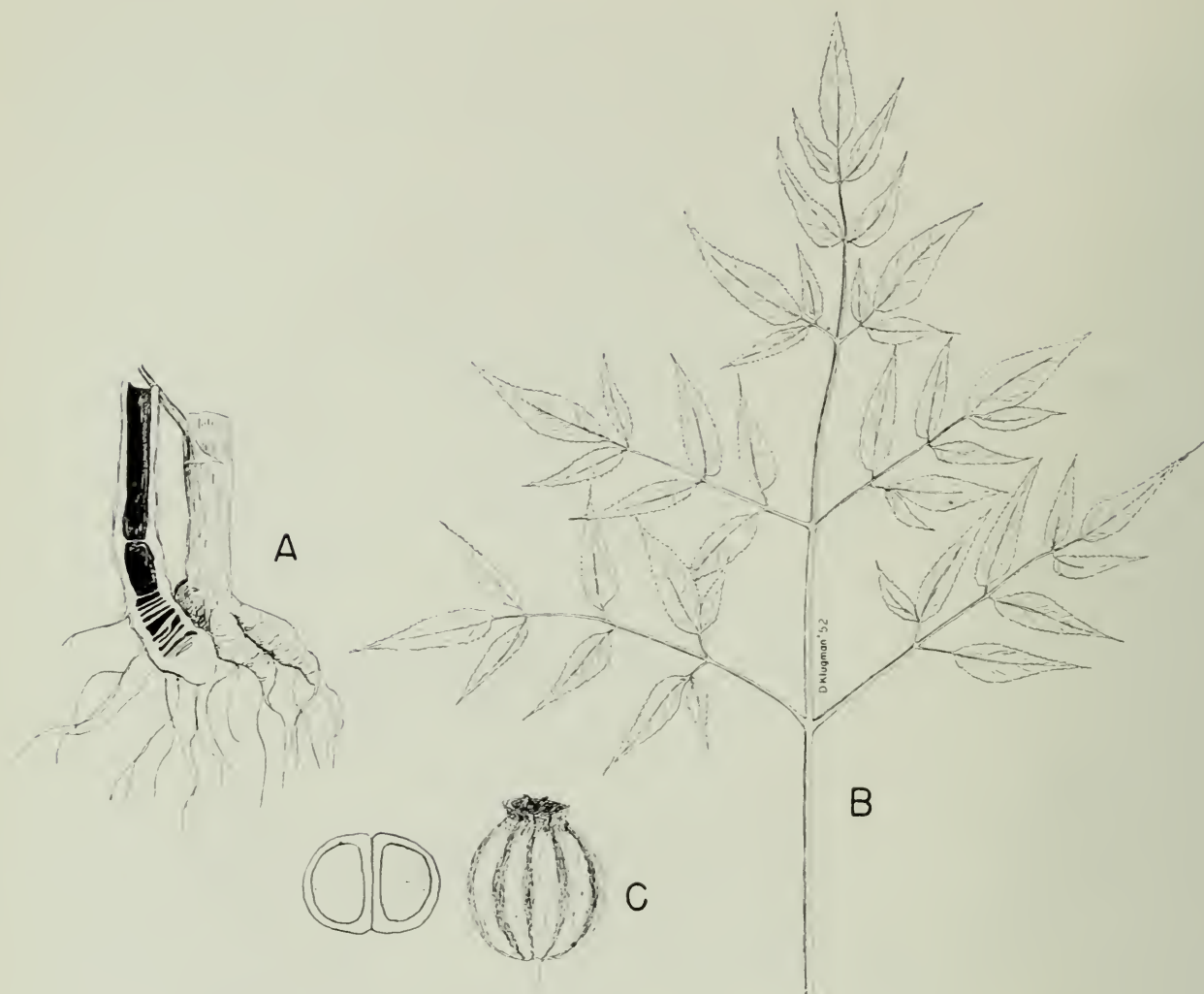


FIG. 37. Water hemlock. A, Base of stem and root. B, Leaf. C, Fruit.

Water Hemlock, Spotted Cowbane, *Cicuta maculata* L. (Fig. 37), is found in wet soils. It is perennial, 2 to 6 feet high. It reproduces by seeds and by the somewhat dahlia-like tuberous roots. The cross-partitions in the pith at the base of the stem of a well developed plant are characteristic (Fig. 37A). The stems are hollow, smooth, sometimes purple-striped and ridged. The alternate leaves have the characteristic broad base to the leaf-stalks where they join the stems. The leaves are three-parted, each division is again divided, and the leaflets have sharp-toothed margins. Usually one of the basal leaflets has a smaller leaflet attached to it (Fig. 37B). The white flowers are in large clusters (umbels) each divided into secondary umbels. The fruit is an important feature to observe when identifying the plant (Fig. 37C and Plate 21, no. 2).

This plant is poisonous to livestock, and low pastures should be carefully examined for its presence, or livestock prevented from feeding in pastures in which it is present. The tuberous roots are the most poisonous part of the plant.

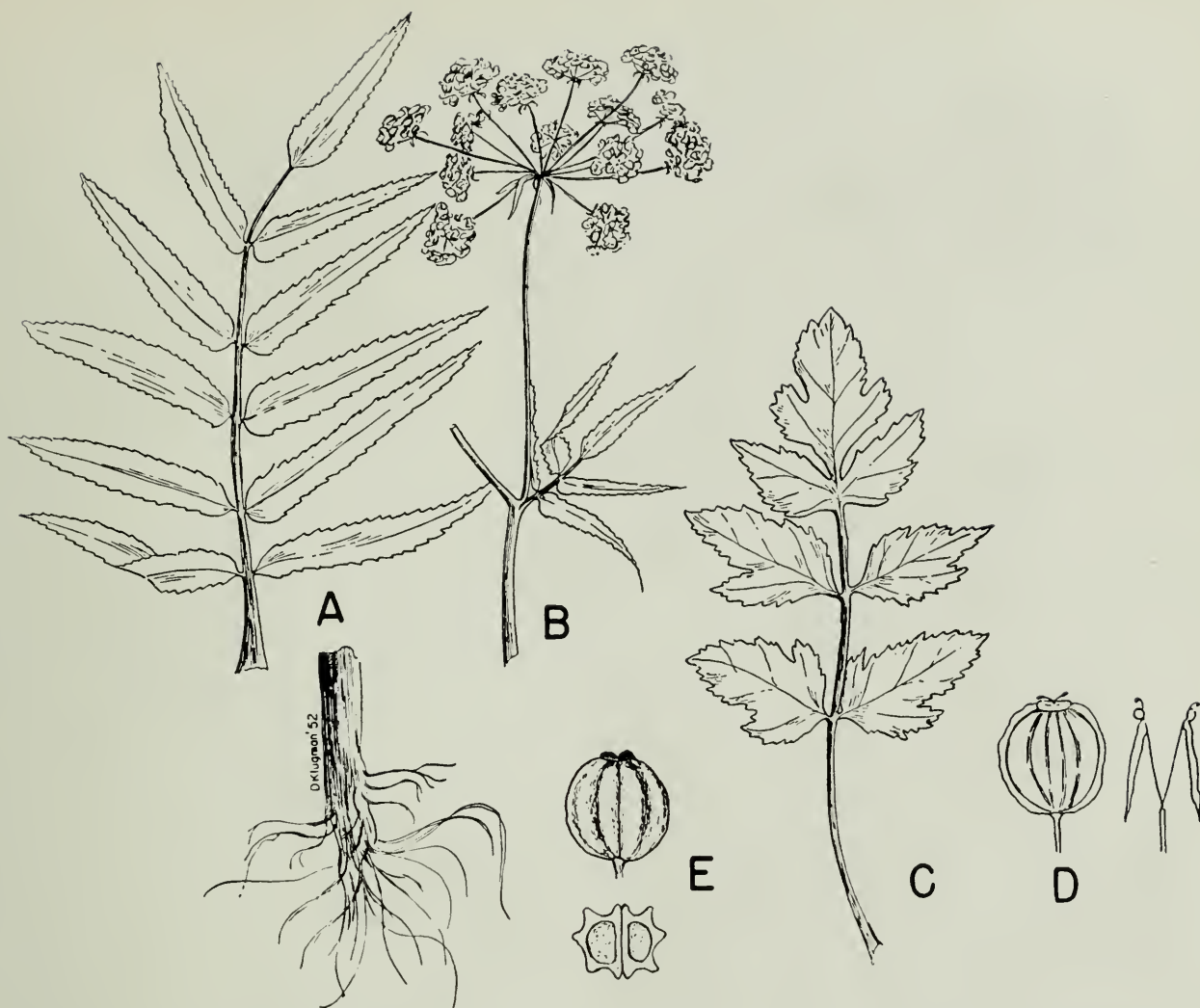


FIG. 38. A and B, Leaf root and flowers of water parsnip. E, Fruit. C, Leaf of wild parsnip. D, Fruit.

Water Parsnip, *Sium suave* Walt. (Fig. 38A & B), is an inhabitant of low wet ground. It is a perennial with smooth, ridged, branching stems. The leaves have 3 to 8 pairs of toothed leaflets (Fig. 38A). The flowers (Fig. 38B) are similar to the former species, but the fruit has prominent ridges on the rounded surface, (Fig. 38E). It is often mistaken for water hemlock. Its reported poisonous properties are without confirmation.

Wild Parsnip, *Pastinaca sativa* L., is found in damp soils. This is the wild form of the cultivated parsnip, and resembles it in general appearance. A leaf is shown in Fig. 38C. The flowers are in umbels, and are bright yellow. The fruits resemble those of the parsnip (Fig. 38D and Plate 21, no. 4).

This plant is known to be a host of the carrot rust-fly.

Wild Carrot, Queen Anne's lace, *Daucus carota* L. (Plate 8), is a biennial weed, and is a very common sight in pastures, abandoned fields and along roadsides. The carrot-like odour, fine, lacy leaves and umbels of white flowers are characteristic. After flowering the tightly folded "bird's nest" of developing fruit is a feature. The fruit has rather heavy ridges with many hooked spines (Plate 21, no. 5).

Wild carrot is an important host of the carrot rust-fly, which attacks carrots, and to a lesser extent parsnips, celery, and parsley. It may also harbour the tarnished plant-bug.

WILD CARROT
DAUCUS CAROTA



PLATE 8. Wild carrot.

THE MILKWEED FAMILY (ASCLEPIADACEAE)

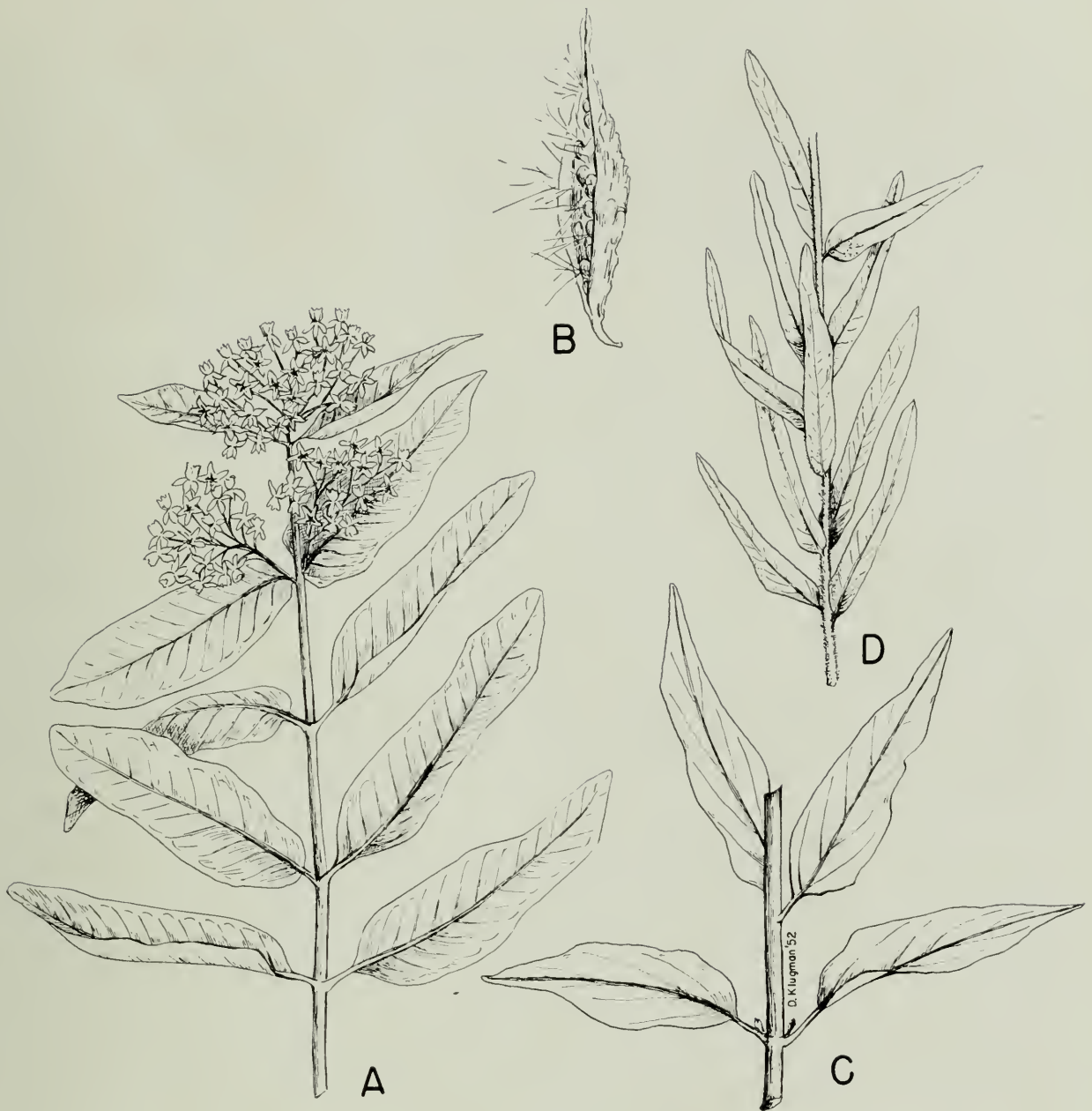


FIG. 39. A, Common milkweed. B, Seed-pod. C, Part of stem of swamp-milkweed. D, Part of stem of butterfly-weed.

Common Milkweed, *Asclepias syriaca* L. (Fig. 39A), is a perennial, reproducing by seed and shoots from the rootstocks. The stems are 2 to 5 feet high, unbranched, finely hairy, and have a milky juice. The leaves are opposite, short-stalked, much-veined and smooth-margined. They are green and smooth on the upper surface, but light coloured and velvety-hairy on the lower surface. The flowers are in umbels, creamy or purplish in colour. The two outer flower parts bend downward when the flowers open. One or two pods may develop from a flower. The pods (Fig. 39B) are warty, and split down one side when ripe, exposing the numerous brown seeds which have tufts of hairs on their upper ends to aid in their dispersal. Seed (Plate 21, no. 6).

In swampy places the **Swamp Milkweed**, *Asclepias incarnata* L. is found. It is quite smooth with stalked, narrow leaves tapering to a point (Fig. 39C). The

flowers are in umbels, and deep pink to reddish in colour. The pods are long, elliptical, pointed and smooth.

Butterfly-weed, Orange milkweed, *Asclepias tuberosa* L., is common in some parts of Ontario, particularly in sandy areas. It is easily identified by its bright, orange-coloured flowers, and tough, rough, hairy stems without milky juice. The leaves are narrow, hairy (Fig. 39D), without stalks, and the seed pods are long and slender.

THE MORNING - GLORY FAMILY (CONVOLVULACEAE)

Field Bindweed, *Convolvulus arvensis* L. (Plate 9). This is a perennial, reproducing by seeds and the underground stems. The above ground stems are weak and twine themselves around any object with which they come in contact. The leaves are very variable in appearance, and the plate shows one common form. The flowers are white or slightly pink and funnel-shaped like those of the morning-glory. The fruit contains 4 seeds. Seed (Plate 21, no. 7).

Hedge Bindweed, *Convolvulus sepium* L., has characteristics similar to the above, but the leaves and flowers are much larger. The flowers have two large green bracts under them, which are not found in the field bindweed. Seed (Plate 21, no. 8).

Dodder, *Cuscuta* species (Plate 10, see p. 53). Dodder is an annual, reproducing by seeds. These seeds, on germinating, produce a light-coloured, thin, vine-like stem which winds itself around a host plant with which it comes in contact. This stem then produces numerous "roots," haustoria, which penetrate the host plant and absorb nourishment for the dodder. This robs the host plant of food which it requires, and thus prevents development. As the dodder plant does not have any green material it cannot manufacture food. The mature twining stems of dodder are yellowish or orange in colour, and without leaves. They produce clusters of small whitish flowers. The seed-pods contain 2 to 4 seeds. Seed (Plate 21, no. 9).

A large number of weeds may be hosts for dodder, and in crop producing areas where infestations occur, every effort should be made to eradicate both the dodder and its hosts.

FIELD BINDWEED

CONVOLVULUS ARVENSIS



PLATE 9. Field bindweed.

THE BORAGE FAMILY (BORAGINACEAE)



FIG. 40. A, Hound's tongue. B, Blue-weed.

Hound's Tongue, *Cynoglossum officinale* L. (Fig. 40A), is a biennial, reproducing by seeds. It has a long taproot, and the leaves of the basal rosette are soft and hairy, oblong or elliptical, with long leaf-stalks. The upper leaves may be without leaf-stalks. The flowers are maroon in colour and about one-half inch in diameter. The "seeds" are roughened by numerous, short, barbed prickles, by means of which they may attach themselves to animals coming in contact with them. Fruit (Plate 21, no. 12).

Blue-Weed, *Echium vulgare* L. (Fig. 40B), is biennial with a deep taproot. It develops from seed, and is usually restricted to well-drained, rather dry ground. In the fall, one may see the rosettes of dark green, rough, hairy leaves lying close to the ground. During the spring and summer the simple or branching stem develops. It is roughened by many bristles arising from coloured glandular spots on the stem. The stem-leaves are not stalked, and are oblong in shape and rather soft-hairy. The plant produces numerous, irregular blue or purplish flowers, and the long stamens and styles project from the flower. The fruit consists of 4 irregularly-shaped nutlets (Plate 21, no. 10).

CLOVER DODDER

CUSCUTA ARVENSIS



W. H. LINDEMANN.

PLATE 10. Dodder.

THE MINT FAMILY (LABIATAE)



FIG. 41. Catnip.

Catnip, *Nepeta cataria* L. (Fig. 41), is not usually a weed of cultivated fields. It is a perennial reproducing by seeds and by shoots from the rootstocks. The stems may become 2 to 4 feet high, and are simple or branching. The plant has the typical square stem of the mint family, and has numerous, short, soft hairs. The leaves are opposite, have thin stalks, rather triangular blades with coarsely-toothed margins and heart-shaped bases. The light, purple-spotted flowers are in dense clusters along the upper ends of the stems and branches. The fruit consists of 4 nutlets, and the seed is dark coloured and has 2 distinctive white marks at one end (Plate 22, no. 2).

Creeping Charlie, Ground ivy, *Glechoma hederacea* L. (Fig. 42), is a perennial weed in a number of habitats, but very troublesome in lawns. It reproduces by seed, and by rooting at the joints of the creeping stems. The leaves are rounded and more or less kidney-shaped. The margins of the leaves have numerous rounded teeth. The flowers originate in the axils of the leaves and are purplish.



FIG. 42. Creeping Charlie.

THE POTATO FAMILY (SOLANACEAE)



FIG. 43. Horse nettle.

Horse Nettle, *Solanum carolinense* L. (Fig. 43), is a perennial plant reproducing by seeds and by creeping rootstocks. The simple or branching stems and the veins of the leaves, particularly on the undersurface, have numerous stout, yellowish spines, and the whole plant is covered with short, star-shaped hairs. The rather large leaves have the margins deeply indented. The clusters of pale violet to white flowers resemble those of a potato. The yellowish fruit consists of a smooth berry similar to a small tomato.

THE FIGWORT FAMILY (*SCROPHULARIACEAE*)



FIG. 44. A, Common mullein. B, Moth mullein.

Common Mullein, *Verbascum thapsus* L. (Fig. 44A). In the fall and spring the leafy rosettes of this biennial weed may be found in dry, usually sandy or gravelly ground. The leaves are large, very woolly, elliptical, tapering to a thick leaf-stalk. During the summer, the tall stem develops and the bases of its leaves extend down the stem to the next leaf, thus making the stem appear winged. The unstalked flowers are in a dense, elongated spike at the top of the stems. The flowers are woolly, and have small sulphur-yellow petals. Seed (Plate 22, no. 5).

The tarnished plant-bug is commonly found on the mullein.

Moth Mullein, *Verbascum blattaria* L. (Fig. 44B). This biennial is not as common as the previous species, but may be found frequently in some localities. It is not as large a plant as the common mullein, and has slender, simple or branching, smooth stems. The rosette leaves are large and deeply lobed, and the stem-leaves are toothed, and without leaf-stalks. The flowers occur singly along the stem, and are yellowish or pinkish-white. The seeds are enclosed in a smooth pod, with a distinct long point at the top. Seed (Plate 22, no. 6).

Toadflax, Butter-and-eggs, *Linaria vulgaris* L. (Plate 11), is a perennial, reproducing from seeds and underground stems. The stems are smooth, simple or branching. The leaves are alternate, narrow, without stalks, and pale green in colour or slightly whitened from the abundant "bloom." The flowers are along the upper part of the stem and look somewhat like the snapdragon flower. They are light yellow with an orange spot on the lower lip and a spur at the base of the lower petal. Seed (Plate 22, no. 7).

BUTTER AND EGGS

LINARIA VULGARIS

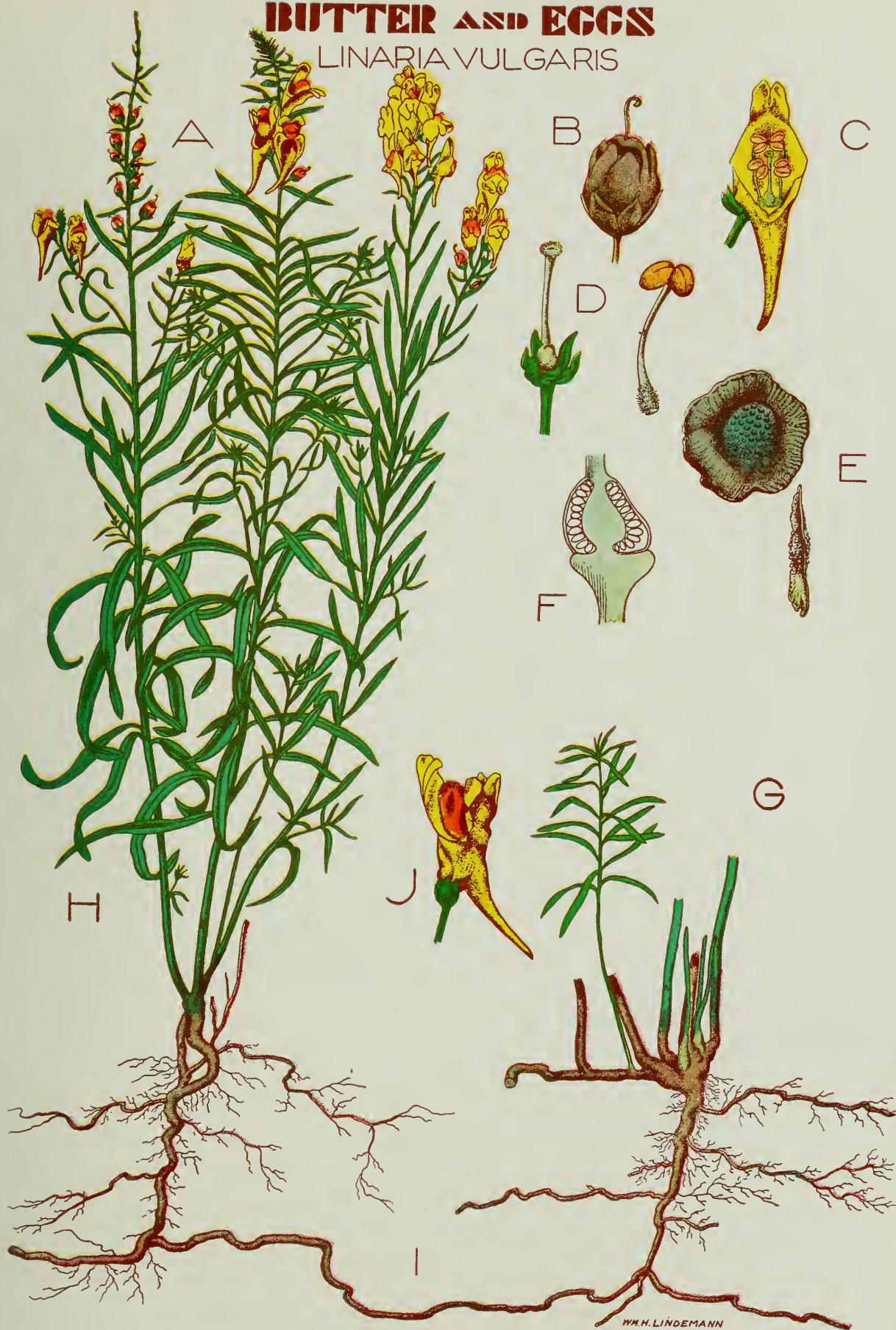


PLATE 11. Toadflax.

THE PLANTAIN FAMILY (*PLANTAGINACEAE*)



FIG. 45. A, Broad-leaved plantain. B, Seed-pod. C, Seed. D, Leaf of Rugel's plantain. E, Seed-pod. F, Ribgrass.

Broad-leaved Plantain, *Plantago major* L. (Fig. 45A), is a perennial, multiplying by seeds and shoots from the root-crown. The leaves lie close to the ground, and have long, broad leaf-stalks; smooth or hairy, rather oval blades; prominent veins running the full length of the blades, and smooth or wavy margins. The numerous small flowers are closely packed along the upper end of the flowering stem. The seed-pods are more or less egg-shaped, and the lid breaks off near the middle of the pod (Fig. 45B). Seed (Plate 22, no. 8).

Rugel's Plantain, Purple-stemmed plantain, *Plantago rugelii* Dcne., looks much like the previous species, but the leaves are more elliptical in shape, and the blades taper more to the leaf-stalk. The base of the leaf-stalk also has a purplish tinge where it joins the stem or crown (Fig. 45D). The seed-pods are longer, and the lid breaks off below the middle of the pod (Fig. 45E). Seed (Plate 22, no. 9).

Ribgrass, Buckhorn, Narrow-leaved plantain, *Plantago lanceolata* L. (Fig. 45F), is easily distinguished from our other common species by the long, tapering leaves which are more erect than in the other species described. The flowering stem is long and slender, and the spike of flowers is very short. Seed (Plate 22, no. 10).

The narrow-leaved plantain is a secondary host of the rosy apple-aphid, an important pest on some varieties of apples.

THE MADDER FAMILY (*RUBIACEAE*)

Bedstraws, *Galium* species. Several species of bedstraws are common. They are usually weak-stemmed, and spread over the ground or over adjacent plants, as in the yellow bedstraw, *Galium verum* L. The stems of bedstraws are 4-angled, and have whorls of rather small leaves. The flowers are small, usually white in weedy species, and produce large numbers of seeds.

One of the weedy species in Ontario is the White Hedge Bedstraw, *Galium mollugo* L. It is a perennial, frequently found in fields and along roadsides.

THE TEASEL FAMILY (*DIPSACACEAE*)



FIG. 46. Teasel.

Teasel, *Dipsacus sylvestris* Huds. (Fig. 46). This is a biennial, 5 to 6 ft. high. The first season's rosette of rather prickly leaves may be seen spreading over the surface of the ground in the fall. In the following spring and summer, the tall, prickly stems develop, and these have a few opposite leaves which are often united by their bases where they join the stem. The stems may branch at the top, and each branch terminates in a spiny cone of flowers at the base of which are stiff, prickly bracts. The numerous flowers in the head are small and purplish. Seeds (Plate 22, no. 11).

COMPOSITE FAMILY (COMPOSITAE)

Goldenrods, *Solidago* spp., are so well known that a description is unnecessary. They are perennial, but do not usually persist in cultivated ground. Goldenrods are common along fences, roadsides and in pastures. There are many species, some restricted to particular habitats.

Asters, *Aster* spp., are in the same category as the goldenrods, and are seldom of any importance as weeds in cultivated ground. Like the goldenrods, they may become an undesirable inhabitant of fences, roadsides and pastures.

The goldenrods and asters are favourite resorts of the tarnished plant-bug which may infest dahlias, chrysanthemums, celery, beets and strawberries.

Canada Fleabane, Horseweed, *Erigeron canadensis* L. (Fig. 47A). This is a simple-stemmed annual, reproducing by seeds, and varying in height from a few inches to 6 feet or more. The lower leaves are long, hairy, with slightly toothed margins, and broader at the tips than at the bases. The upper leaves

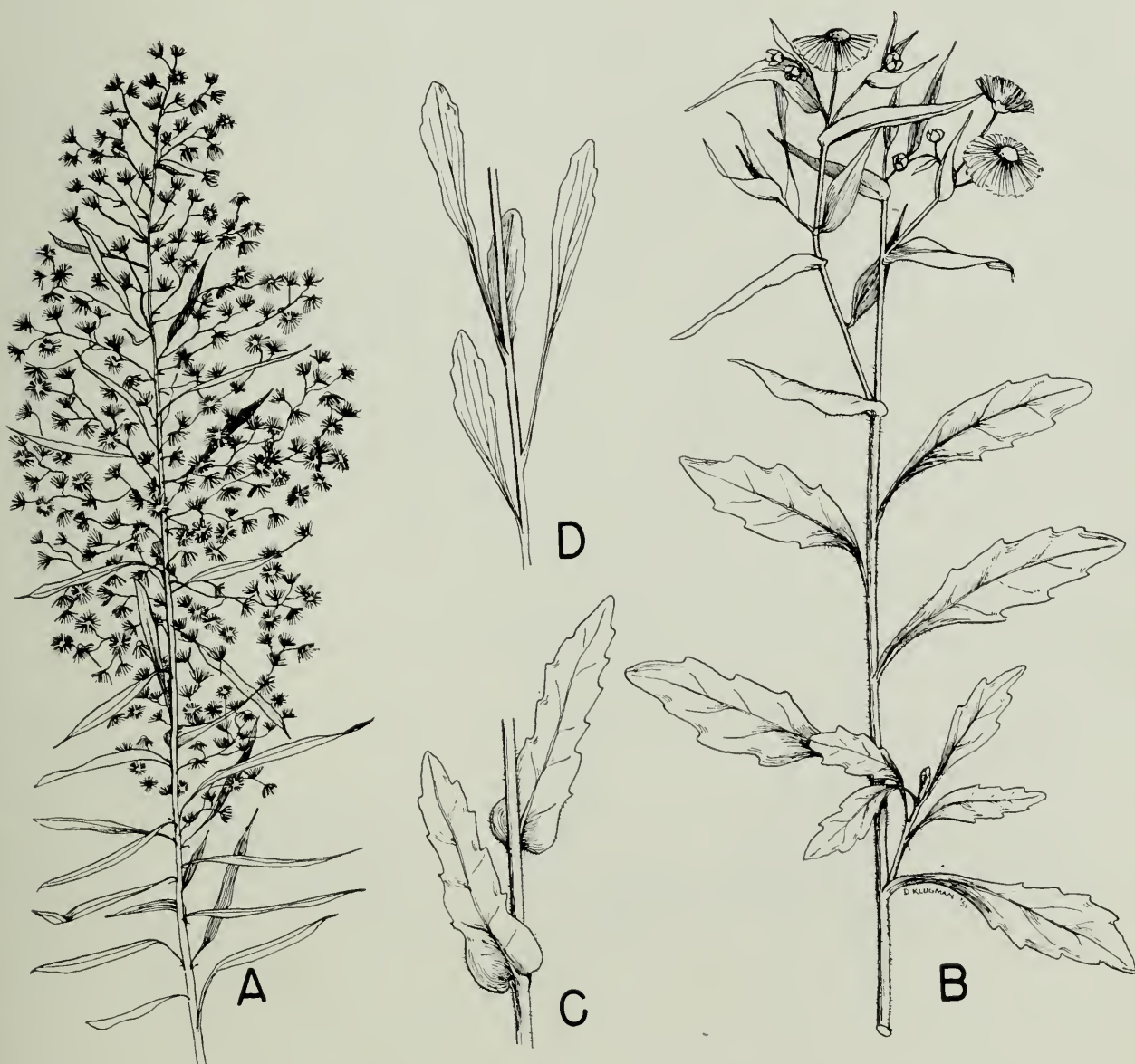


FIG. 47. A, Canada fleabane. B, Daisy fleabane. C, Leaf of Philadelphia fleabane. D, Leaf of daisy fleabane *Erigeron strigosus*.

have a similar shape, but are much shorter. The flowering top of the stem is very branching, and each branchlet terminates in a head of small, whitish flowers. When the plants are mature, a mass of brownish hairs has replaced the flowers, and these are attached to the seeds, and aid in their dispersal. Seed (Plate 23, no. 3).

Daisy Fleabane, *Erigeron annuus* (L.) Pers., grows about 2 feet high. The lower leaves are oval, coarsely toothed and have long, margined leaf-stalks. The upper stem-leaves are similar, but have shorter leaf-stalks (Fig. 47B). The whole plant is rather hairy. The upper part of the stem divides into numerous branchlets, each terminating in daisy-like heads. The flowers around the edge of the head may be whitish or purplish, but the central disc flowers are yellowish. The flowers are larger than those of Canada fleabane.

Daisy Fleabane, *Erigeron strigosus* Muhl. The leaves are more or less narrow elliptical, broad at the tips and tapering to long leaf-stalks (Fig. 47D). The flowers are similar to the other fleabanes and have white flowers around the edge of the head.

Philadelphia Fleabane, *Erigeron philadelphicus* L. The stem-leaves are oblong, without leaf-stalks and attached to the stem by a broad, almost clasping base (Fig. 47C). The flowers around the edge of the head are usually pinkish or purplish.

Common Ragweed, Roman wormwood, *Ambrosia artemisiifolia* L. and its var. *elatior* (Plate 12). This annual species varies from a few inches to three feet in height. The stem is simple or branching, and either smooth or hairy. The leaves are opposite or alternate, and very much dissected. Two kinds of flowers, male and female, occur on this plant. The male flowers are the drooping, small, greenish, pollen-producing flowers at the ends of the branches. The female flowers are the seed-forming flowers which occur between the upper leaf-stalks and the stem, or between the flowering branches and the stem. In late summer and early fall, the male flowers produce an enormous amount of pollen to which many people are allergic, and become afflicted with hay-fever. Seed (Plate 22, no. 13). Plants with less dissected leaves are also common.

Ragweed is recorded as harbouring the potato-aphid.

COMMON RAGWEED
AMBROSIA ARTEMISIIFOLIA L.



PLATE 12. Common ragweed.



FIG. 48. Great ragweed.

Great Ragweed, *Ambrosia trifida* L. (Fig. 48), is also an annual, but is much larger than the previous species. The leaves are opposite, and the stem-leaves of the most common variety are usually 3-lobed. The flowers are in the same relative positions, and have the same general appearance as those of the common ragweed. The seeds are larger, but otherwise similar to those of the common ragweed (Plate 22, no. 14).

The forma *integrifolia* may also be found, but not as frequently as the typical species. It has the same general appearance as the great ragweed, but the leaves are not lobed.



FIG. 49. Black-eyed Susan.

Black-eyed Susan, Coneflower, *Rudbeckia serotina* Nutt. (Fig. 49). This is a rough perennial plant with broad, stalked, lower stem-leaves, and narrow upper leaves without stalks. The flowering heads are quite distinctive with their bright, orange-yellow flowers around the edge of the head, and dark purple or black, conical central disc. Seed (Plate 23, no. 1).



Yarrow, Milfoil, *Achillea millefolium* L. (Fig. 50), is a perennial, with a simple stem which branches at the top to form the flat-topped flower clusters. The leaves are very finely dissected, and both stems and leaves are finely hairy. The flowering tops have many small whitish or pinkish flowers. Seed (Plate 23, no. 8).

FIG. 50. Yarrow.

OX-EYE or WHITE DAISY

CHRYSANTHEMUM LEUCANTHEMUM



PLATE 13. Ox-eye daisy.

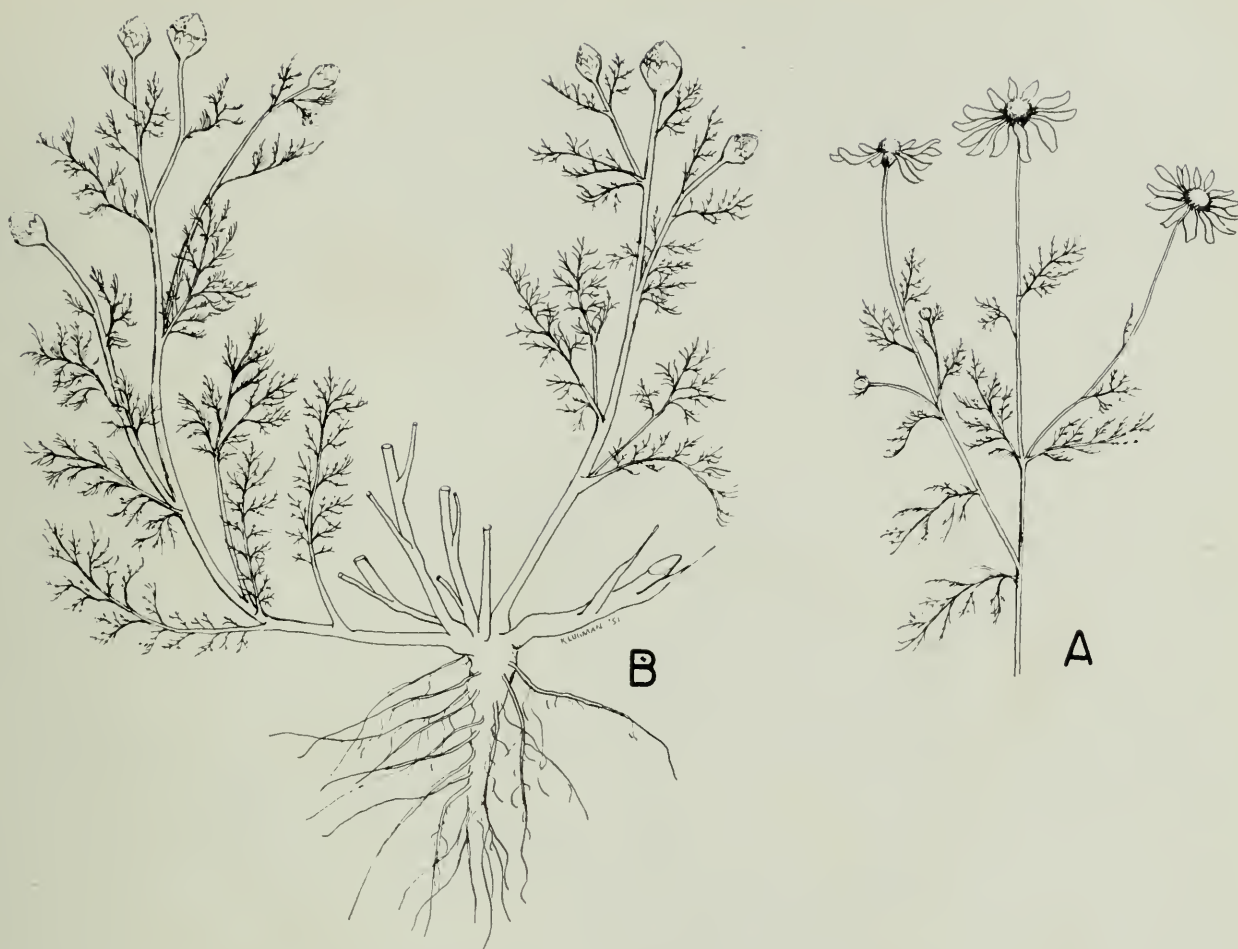


FIG. 51. A, Stinking mayweed. B, Pineapple-weed.

Stinking Mayweed, Dog fennel, *Anthemis cotula* L. (Fig. 51A), is a rather bushy, rank-smelling plant with very finely dissected leaves. The flowers have daisy-like heads with white flowers around the edge and yellow centres. Seed (Plate 23, no. 4).

A very similar looking plant, the **Pineapple-weed**, *Matricaria matricarioides* (Less.) Porter (Fig. 51B), has a pleasant pineapple odour. It lacks the conspicuous white flowers around the edge of the head which are present in stinking mayweed, and it has a yellowish-green cone-like centre. Seed (Plate 23, no. 5).

Ox-eye Daisy, *Chrysanthemum leucanthemum* L. and var. *pinnatifidum* Lecoq. and Lamotte (Plate 13). This is a perennial weed, with wide-spreading rootstocks and simple or branching stems. The lower leaves are deeply lobed, toothed and long stalked. The upper leaves are without stalks, and roughly toothed, particularly at their bases. The flowering head has a series of white flowers around the outside and a yellow disc. The seeds are black- and cream-striped and ridged (Plate 23, no. 6).

Common Tansy, *Tanacetum vulgare* L. (Fig. 52), is a tall, smooth, single-stemmed perennial arising from an underground rootstock. It is usually found along fences, roadsides, and in uncultivated ground. The leaves are much dissected and dark green. The flowering heads form dense, branching, flat-topped flower clusters. Each head consists of a button-like disc of small, yellow tubular flowers, but lacks any showy flowers around the edge of the head. Seed (Plate 23, no. 7).



FIG. 52. Common tansy.

Common Burdock, *Arctium minus* (Hill) Bernh. (Fig. 53). A large coarse biennial weed of farmyards, fencerows and uncultivated areas. The first season it develops a large, branching root-system, and a rosette of long-stalked, large, rough, heart-shaped leaves with irregularly-toothed margins. In the second year, a tall, rough, leafy stem forms, and its branches terminate in heads of purplish flowers surrounded by hooked bracts. When the seed is mature, these heads break off easily from the stalks, and are carried away by adhering to animals or clothes of people coming in contact with them; thus the seeds are dispersed. Seed (Plate 23, no. 10).



FIG. 53. Common burdock.

CANADA THISTLE

CNICUS ARVENSIS



PLATE 14. Canada thistle.

The **Great Burdock**, *Arctium lappa* L., is also to be found. It is very large with large, greenish heads usually in groups of threes.

The stalk-borer finds burdock a suitable plant on which to live.

Canada Thistle, *Cirsium arvense* (L.) Scop. (Plate 14). A perennial developing from an extensively creeping rootstock. The branching stem has numerous, unstalked leaves. The leaves are deeply indented, and the margins have many, rigid, spine-tipped teeth. The flowering heads contain numerous, usually purplish flowers surrounded by spine-tipped bracts. The seeds have tufts of hairs which give them buoyancy, and they are dispersed by the wind. Seed (Plate 23, no. 13). Variations from the normal characteristics of this thistle are also known in **Ontario**.

Bull Thistle, *Cirsium lanceolatum* Hill (Fig. 54A). This thistle is a deep-rooted biennial 3 to 4 feet high with large upright heads and deep-purple flowers. The stems have prickly wings, and the leaves are woolly-hairy on the under surface. Seed (Plate 23, no. 12).

Nodding Thistle, *Carduus nutans* L., may be identified by its large, nodding heads, and deep-purple flowers (Fig. 54B). The upper surface of the leaves are a lighter green than those of the Bull thistle.

Very similar in appearance, but without the nodding heads, is the **Wetted Thistle**, *Carduus acanthoides* L. This may be common in some areas.

Scotch Thistle, *Onopordum acanthium* L. (Fig. 54C), is a very tall, branching biennial. The stems have broad, spiny wings, and the leaves are deeply lobed and have spiny margins. The whole plant is densely white woolly-hairy. The flowers are large and purple. Seed (Plate 23, no. 14).

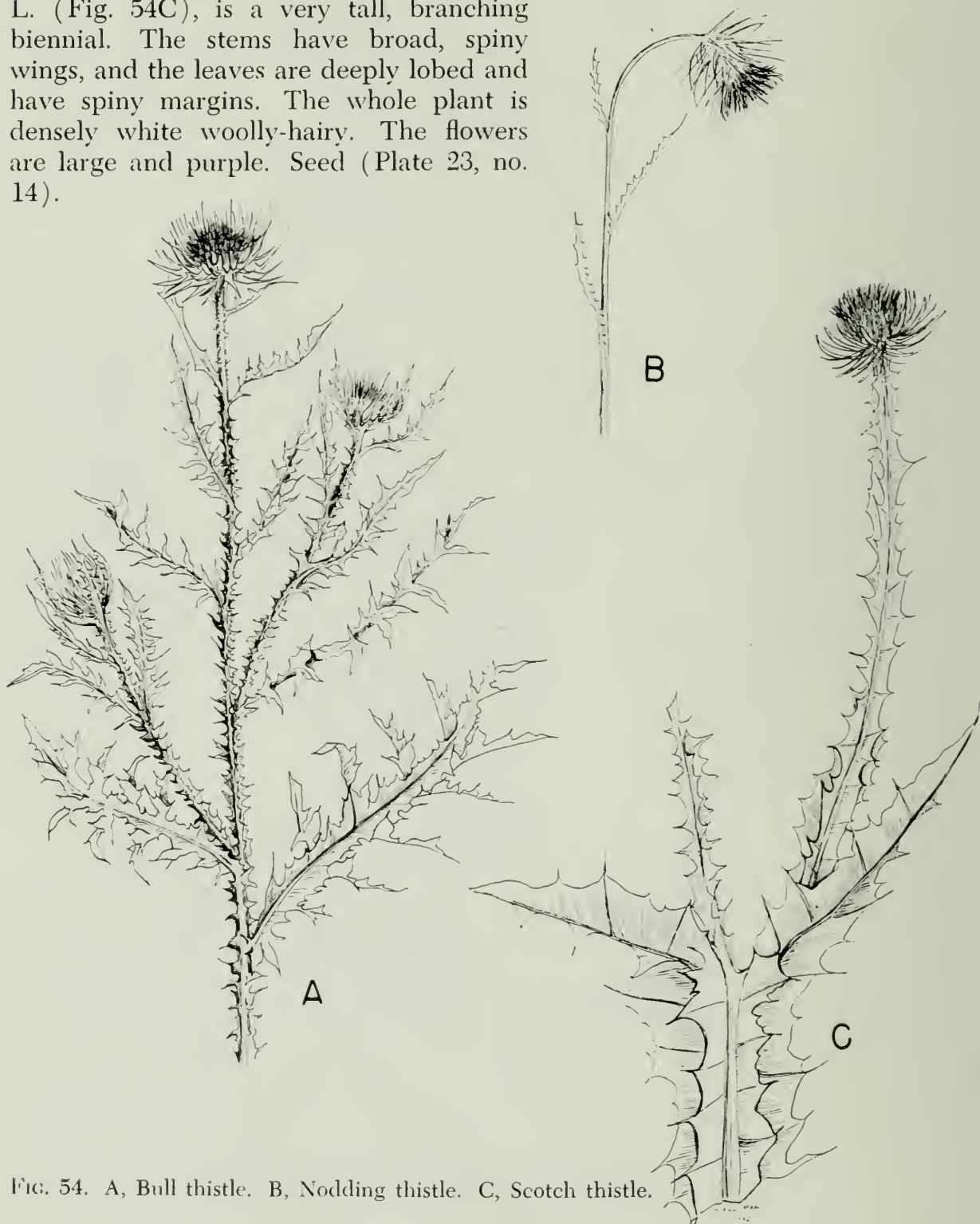


FIG. 54. A, Bull thistle. B, Nodding thistle. C, Scotch thistle.

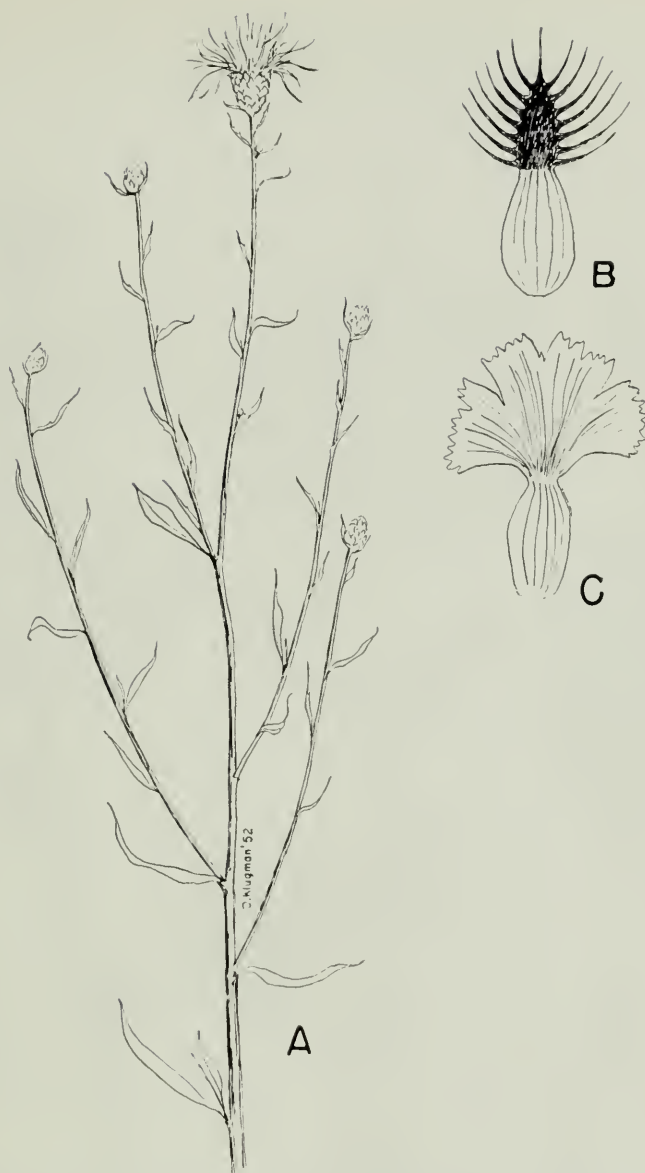


FIG. 55. A, Knapweed. B, Bract of black knapweed. C, Bract of *Centaurea jacea*.

Knapweeds, *Centaurea* spp. (Fig. 55A). The common wild species of knapweeds are rather difficult to separate. The figure shows one common species, *C. jacea*. The most distinguishing characteristics are the thistle-like heads with purplish flowers, and the peculiar bracts under the heads. These are lacy-fringed, or spiny at the tips. The appearance of the tips of the bracts is often used to separate different species. Figure 55C shows a middle bract of *C. jacea*, and figure 55B shows a middle bract of *C. nigra*, the black knapweed. Seed (Plate 23, no. 15).

A third common species is *C. maculosa* which has much divided leaves.

Chicory, *Cichorium intybus* L. (Plate 15), is a very common biennial or perennial with a large deep-penetrating root, and tall, branching, rather ragged looking stems. The leaves close to the ground are somewhat like those of the dandelion. The stem leaves are much shorter. They do not have a leaf-stalk, and do not clasp the stem. The flowering heads are about one inch in diameter, and develop in the axils of the small leaves. They have many blue flowers which are usually open only for a short time. Seed (Plate 23, no. 17).

CHICORY
CICHORIUM INTYBUS L.



PLATE 15. Chicory.



FIG. 56. A, Yellow goat's-beard. B, Head of *Tragopogon dubius*. C, Head of salsify.

Yellow Goat's - Beard, *Tragopogon pratensis* L. (Fig. 56A), is usually a biennial weed with large taproot and tall, smooth stem 2 to 3 ft. high with milky juice. The leaves are broad at the base, and taper to a long, wrinkled, curled point. The large heads have many golden-yellow flowers. The flowers open in the morning, and are usually closed by noon. The head remains closed until seeds are mature, when it opens into a large, fluffy ball with long whitish plumes attached to the seeds. Seed (Plate 24, no. 5).

A second yellow goat's-beard *Tragopogon dubius* Scop., is often mistaken for the previous species. However, it is easily distinguished by the shorter and heavier stems, the long taper-pointed, straight-tipped leaves, a distinct swollen area in the stem below the heads, and the lemon-yellow flowers which are shorter than the green bracts (Fig. 56B). The fruiting heads are about twice the size of those of the first species, and the hairs are a dirty gray colour. The plants prefer sandy or well drained soils. A small variety of this species is also to be found. It is from 6 to 12 inches high, single-stemmed, and has smaller flowers.

Salsify, Oyster plant, *Tragopogon porrifolius* L., is very similar in appearance to the Yellow Goat's Beard, but is taller, and has a slightly whitish appearance. The stem is swollen below the heads. The flowers are purple and shorter than the green bracts under them (Fig. 56C), and the hairs at the ends of the seeds are brownish in colour.

Dandelion, *Taraxacum officinale* Weber. This weed is so well known that a description is unnecessary. Seed (Plate 24, no. 3). The **Fall Dandelion**, *Leontodon autumnalis*, should not be confused with the common dandelion because of the similarity in names. It is easily distinguished from the common dandelion by its smaller leaves, and also by the smaller flowering heads. The stems are branched at the top, and are not hollow and fleshy.

Perennial Sow Thistle, *Sonchus arvensis* L. (Fig. 57). This is a widely distributed perennial, with an extensive underground rootstock from which the tall stems arise. The basal leaves are large, deeply lobed, spiny-toothed and clasping the stems. The upper leaves may be quite short, and clasping the stems. The terminal lobe of all of the leaves is usually long-pointed. The flower bearing branches are long, hairy, and with few leaves. The heads of bright or orange-yellow flowers are about 1½ inches in diameter, and surrounded by numerous bracts which have glandular, sticky hairs. The seeds are brown, and have several longitudinal ridges. The ridges are prominent and clearly cross wrinkled (Plate 24, no. 2). Several variations from the typical species occur. One frequent variety lacks the sticky hairs on the upper part of the stem and flower head.



FIG. 57. Perennial sow thistle. A, Lower portion of stem. B, Flowering portion of stem. C, Flowering head.



FIG. 58. A, Leaf of common annual sow thistle. B, and C, Spiny annual sow thistle.

Common Annual Sow Thistle, *Sonchus oleraceus* L., is an annual, with a well developed taproot. The soft, smooth leaves are deeply indented, but the terminal lobe is short, broad and rounded or triangular in shape (Fig. 58A). The flowers are pale or lemon yellow, and less than one inch in diameter. The stems and the bracts are smooth (no hairs). The seeds are much similar in size and shape to the perennial sow thistle. The longitudinal ridges are not as prominent and there are numerous transverse wrinkles or lines between the ridges.

Spiny Annual Sow Thistle, *Sonchus asper* (L.) Hill, is distinguished by its large, smooth leaves, with broad, rounded, clasping base, pointed tips and sharply toothed margins which are not as deeply lobed as the margins of the common annual. (Fig. 58B and C). The seeds differ from either the perennial or the common annual sow thistles. They are much flattened, more oval, and with 3 or 5 longitudinal ridges, otherwise smooth.

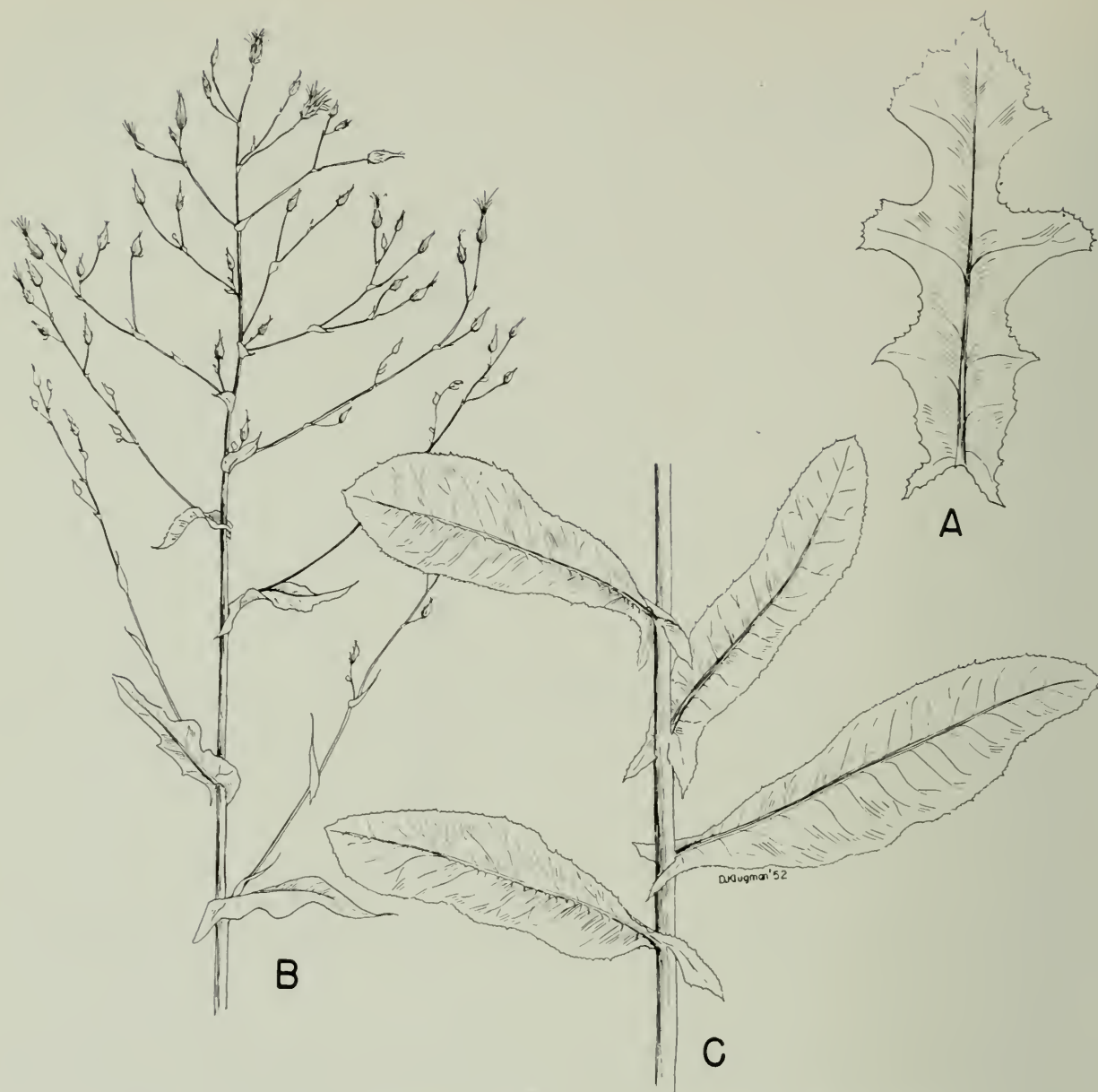


FIG. 59. A and B, Prickly lettuce. C, Leaf of forma *integrifolia*.

Prickly Lettuce, *Lactuca scariola* L. (Fig. 59), is an annual or biennial plant, with a long, deep-growing taproot and tall, unbranched stem. The leaves are deeply lobed (Fig. 59A - B), more or less dandelion-like, and clasping the stem by a heart-shaped base. They may have spiny margins, and the lower surface of the main veins of the leaves have rather stiff spines. The leaf-blades are most frequently in a vertical position, instead of horizontal as in most plants. The flowering part consists of many heads of small yellow flowers.

There is a form of prickly lettuce, forma *integrifolia*, which does not have the deeply lobed leaves, or only the basal ones are toothed (Fig. 59C). In some places this may be more common than the species. Seed (Plate 24, no. 4).



FIG. 60. Orange hawkweed.

Orange Hawkweed, Devil's paint brush, *Hieracium aurantiacum* L. (Fig. 60), is a perennial, which reproduces by seed and by runners. It is quite distinctive with its dark, orange-coloured heads of flowers which develop in a cluster on a hairy, nearly leafless stem, one to two feet in height. At the base of the flowering stem is a rosette of broad-tipped hairy leaves. Seed (Plate 24, no. 5).

Yellow Hawkweeds, King devils, *Hieracium* spp., may be roughly divided into two groups: — those which have leafy flowering stems, and those which have flowering stems without leaves. Most of our common weedy species belong to the latter group. They have rosettes of leaves on the surface of the ground, and from a rosette arises the usually leafless flowering stem. This divides at the top and produces few to many small, yellow heads of flowers. (Plate 16).

KING DEVIL



PLATE 16. Yellow hawkweed.

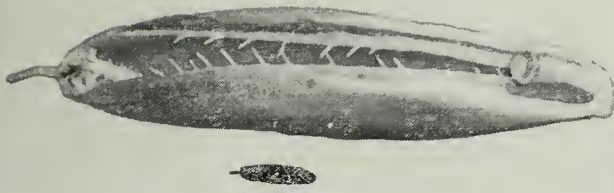
NOTES

PLATE 17

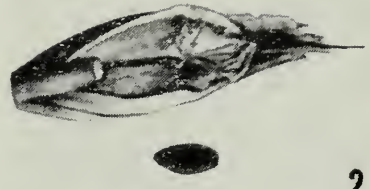
Photographs by F. H. MONTGOMERY

1. CHESS, *Bromus secalinus* L. Dull yellow to gray; margins of inner bract with stiff hairs; awn short or none.
2. COMMON DARNEL, *Lolium temulentum* L. Dull yellow to gray; awned or awnless.
3. COUCH OR QUACK-GRASS, *Agropyron repens* (L.) Beauv. Greenish-gray colour; margin of inner bract with short hairs.
4. BARNYARD-GRASS, *Echinochloa crusgalli* (L.) Beauv. Yellowish to gray; strongly rounded on the back; back and margins of outer bracts bristly-hairy; inner seed-coverings smooth, glossy and faintly lined.
5. WILD OAT, *Avena fatua* L. Gray to brown in colour; the basal sucker-like scar surrounded by stiff hairs; back of grain covered with fine hairs; awn bent at right-angles and lower part twisted.
6. JOHNSON GRASS, *Sorghum halapense* (L.) Pers. Glossy; light to dark brown; two small stalks at base of grain closely pressed against grain.
7. YELLOW FOXTAIL, *Setaria glauca* (L.) Beauv. Yellow, green or brownish with numerous coarse transverse wrinkles on the rounded side. Hull covers less than half of the grain.
8. GREEN FOXTAIL, *Setaria viridis* (L.) Beauv. Colour varies with the ripeness of the seeds, but most frequently they are brownish, mottled, with very fine transverse wrinkles on the rounded side. Hull covers all of the grain.
9. SANDBUR, *Cenchrus longispinus* (Hack.) Fern. Greenish-yellow to gray; easily identified by its long, sharp, stiff spines.
10. CRABGRASS, *Digitaria* spp. Green, brown or purple; strongly ribbed and slightly hairy. See p. 9 for differences between two weedy finger-grasses.
11. OLD WITCH-GRASS, *Panicum capillare* L. Outer bracts often remain attached; grain greenish-gray to brown; shiny with light lines on the rounded side.

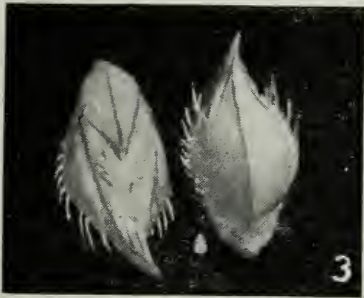
GRASS SEEDS



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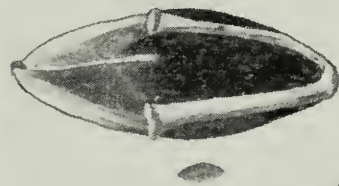
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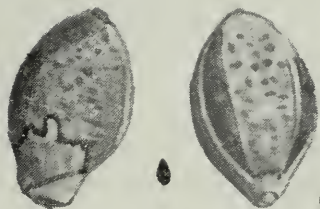
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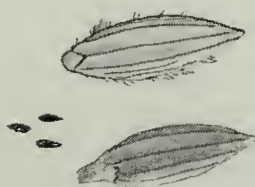
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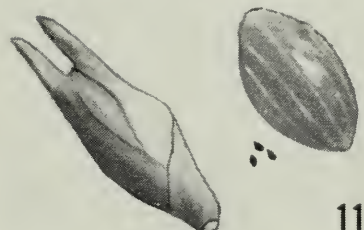
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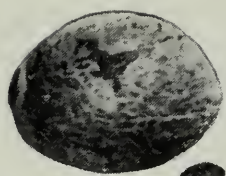


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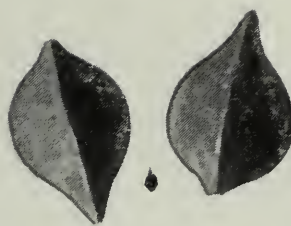
PLATE 18

1. HEMP, *Cannabis sativa* L. The seed is large with a grayish-brown slightly mottled covering, which is finely net-veined.
2. CURLED DOCK, *Rumex crispus* L. Shiny brown and smooth; symmetrically beechnut-shaped.
3. SHEEP SORREL, *Rumex acetosella* L. Seed usually covered by flower parts with fine veins and is dull brown; seed itself is shiny brown; beechnut-shaped.
4. WILD BUCKWHEAT, *Polygonum convolvulus* L. Dull black, beechnut-shaped; hull brown.
5. LADY'S THUMB, *Polygonum persicaria* L. Shiny black, more or less flattened or lens-shaped.
6. LAMB'S QUARTERS, *Chenopodium* spp. The shiny black, lens-shaped seeds are usually covered by a grayish coating which has a circular opening at the top showing the enclosed black seed.
7. SPREADING ORACHE, *Atriplex patula* and varieties. Seeds covered by triangular bracts; seeds rounded, lens-shaped, shiny black.
8. RUSSIAN PIGWEED, *Axyris amaranthoides* L. Two types of seed are found; one has a grayish-brown and lightly streaked thin covering which extends over the upper end of the seed forming two wings at one end. The second kind does not have the wings.
9. RUSSIAN THISTLE, *Salsola kali* var. *tenuifolia* Tausch. Seed more or less snail-shell shaped; a thin membranous coating covers the coiled embryo; top of seed concave with small projection in centre.
10. REDROOT PIGWEED, *Amaranthus retroflexus* L. Shiny black, egg shaped and flattened.
11. PURSLANE, *Portulaca oleracea* L. Shiny black; covered with small tubercles resembling those of the cockles.
12. SPURRY, *Spergula arvensis* L. Dull black, lens-shaped with a pale; winged margin; surface covered with brownish gland-like projections.
13. COMMON CHICKWEED, *Stellaria media* (L.) Cyrill. Dark gray or brown.
14. COMMON MOUSE-EAR CHICKWEED, *Cerastium vulgatum* L. Brown; somewhat triangular with fine tubercles.
15. PURPLE COCKLE, *Agrostemma githago* L. Dull purplish-black; sides flattened or concave; regular rows of rather large, sharp tubercles.
16. RED COCKLE, *Lychnis dioica* L. Gray to black; prominent scar at base.

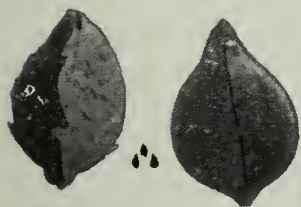
Knotweed,
Goosefoot,
Amaranth,
Purslane families.



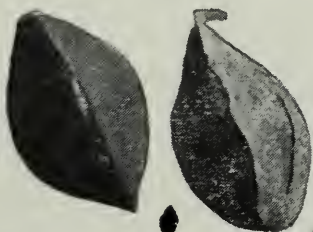
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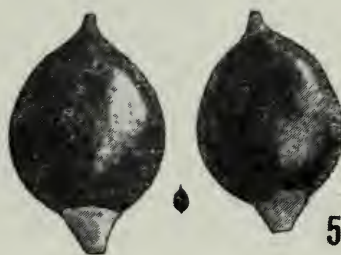
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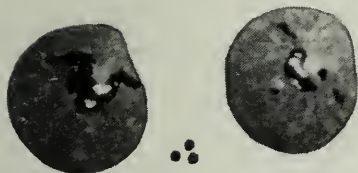
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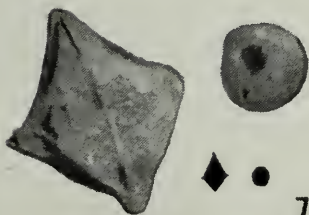
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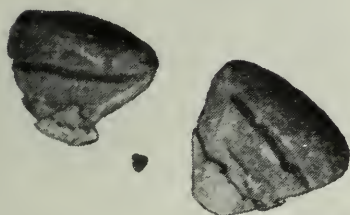
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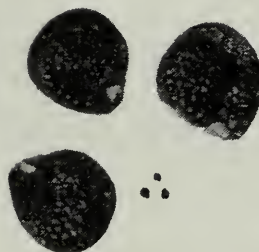
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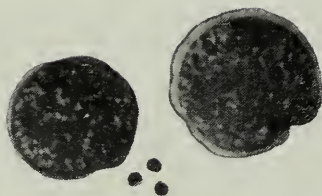


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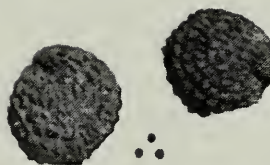


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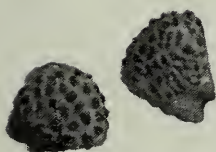
Pink family.



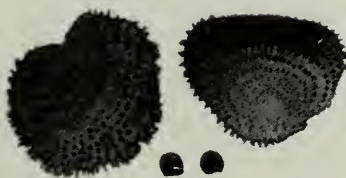
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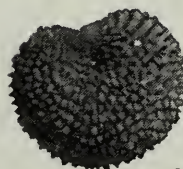
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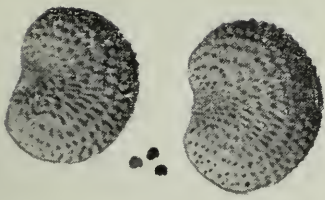
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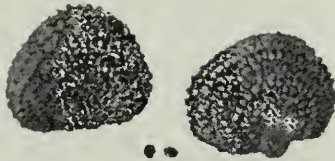
16

PLATE 19

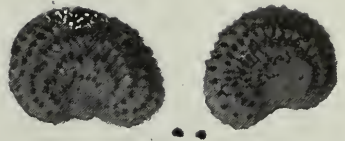
1. WHITE COCKLE, *Lychnis alba* Mill. Light gray colour; tubercles less numerous than in bladder campion or night-flowering catchfly.
2. BLADDER-CAMPION, *Silene cucubalus* Wibel. Dark gray; difficult to separate from night-flowering catchfly, but usually many of the seeds are more or less triangular in shape as in the left seed of the figure.
3. FORKED CATCHFLY, *Silene dicotomota* (L.) Gray. Tubercles dark-tipped and less numerous and more sharply pointed than in night-flowering catchfly.
4. NIGHT-FLOWERING CATCHFLY, *Silene noctiflora* L. Very similar to bladder campion but tubercles black-tipped and less sharply pointed.
5. BOUNCING BET, *Saponaria officinalis* L. Dull black; very finely roughened by small blunt tubercles.
6. COW COCKLE, *Saponaria vaccaria* L. Dull black; spherical surface minutely roughened.
7. TALL BUTTERCUP, *Ranunculus acris* L. Brown to nearly black, dull.
8. HOARY ALYSSUM, *Berteroa incana* (L.) DC. Dull gray to brown; lens-shaped; margin slightly winged.
9. PENNY-CRESS OR STINKWEED, *Thlaspi arvense* L. Purplish-black; surfaces with distinctive ridges.
10. FIELD PEPPER-GRASS, *Lepidium campestre* (L.) R. Br. Dark gray; surface finely roughened; white-tipped at base.
11. COMMON PEPPERGRASS, *Lepidium densiflorum* Schrad. Reddish-brown; slightly wing-margined.
12. HOARY CRESS, *Cardaria draba* (L.) Desv. Dark reddish-brown; surface slightly roughened.
13. SHEPHERD'S PURSE, *Capsella bursa-pastoris* (L.) Medic. Reddish-brown with slightly pitted surface.
14. SMALL-SEEDED FALSE FLAX, *Camelina microcarpa* Andrz. Dark reddish-brown; finely roughened surface.
15. WESTERN OR LARGE-SEEDED FALSE FLAX, *Camelina sativa* (L.) Crantz. Larger and pale reddish-brown; surface finely pitted.
16. BALL MUSTARD, *Neslia paniculata* (L.) Desv. A yellow seed is enclosed within a ball shaped pod. The seed pod is grayish and its surface coarsely veined. It is usually found in this form in grain.
17. WILD RADISH, *Raphanus raphanistrum* L. The seeds remain enclosed in the pod which fractures into small segments. The seed is brownish and its surface finely pitted or netted.



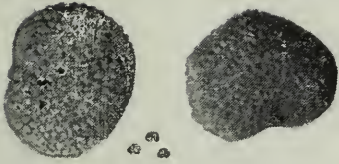
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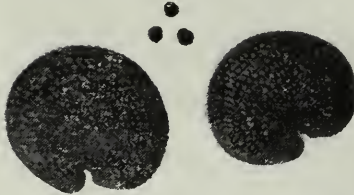
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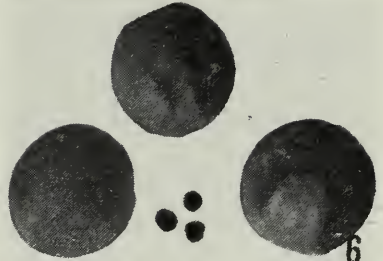
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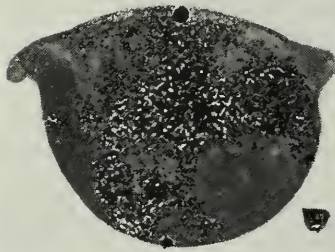


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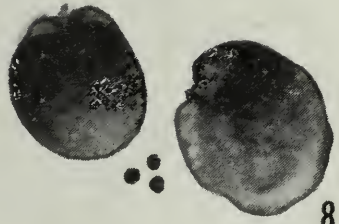


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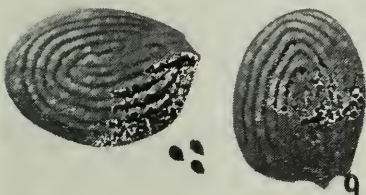
Buttercup,
Mustard families.



7



8



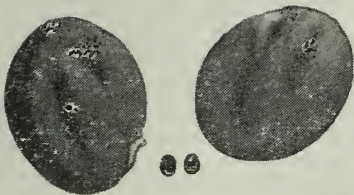
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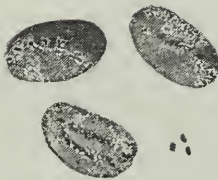
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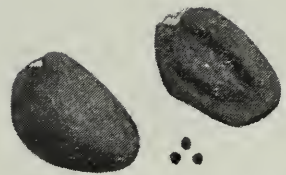
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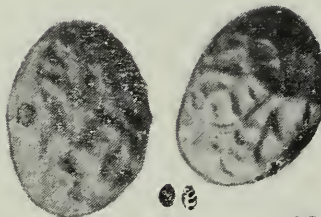
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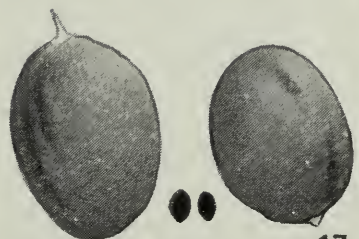
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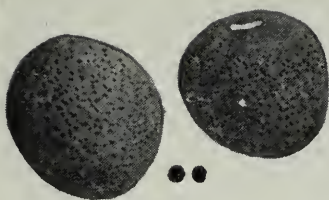
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PLATE 20

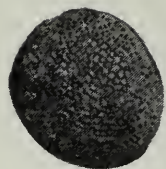
1. WILD MUSTARD, *Brassica kaber* (DC.) L. C. Wheeler var. *pinnatifida* (Stokes) L. C. Wheeler. Reddish-brown to black, and surface very finely pitted.
2. INDIAN MUSTARD, *Brassica juncea* (L.) Coss. Dark gray and finely pitted.
3. BLACK MUSTARD, *Brassica nigra* (L.) Koch. Gray, brown; finely pitted.
4. DOG MUSTARD, *Erucastrum gallicum* (Willd.) O. E. Schulz. Reddish-brown; very finely net-veined.
5. HARE'S-EAR MUSTARD, *Conringia orientalis* (L.) Dumort. Dark gray or brown; pointed at one end and slightly roughened.
6. HEDGE MUSTARD, *Sisymbrium officinale* (L.) Scop. Grayish-brown.
7. TUMBLING MUSTARD, *Sisymbrium altissimum* L. Light brown or yellowish.
8. FLIXWEED, TANSY MUSTARD, *Descurania sophia* (L.) Webb. Light reddish-brown without black tip.
9. WORMSEED MUSTARD, *Erysimum cheiranthoides* L. Reddish-brown with black tip.
10. YELLOW ROCKET, *Barbarea vulgaris* R. Br. Glossy, gray to brown; surface slightly roughened.
11. ROUGH-FRUITED CINQUEFOIL, *Potentilla recta* L. Dark gray; ridges prominent and sharp; margins slightly winged.
12. ROUGH CINQUEFOIL, *Potentilla norvegica* L. Light gray; ridges rounded, and less prominent.
13. YELLOW AVENS, *Geum* spp. Dark brown; hairy on the margins and sometimes on the sides.
14. BLACK MEDICK, *Medicago lupulina* L. Seed covering black and ridged; calyx persistent; one seed per pod; seed yellow, egg shaped and smooth with a projection on one side.
15. LEAFY SPURGE, *Euphorbia esula* L. Gray, slightly mottled with a light or dark ridge along one side.
16. ROUND-LEAVED MALLOW, *Malva neglecta* Wallr. Seed-covering gray; flattened on the sides; minutely hairy on the curved surface. Usually found in this condition.
17. ST. JOHN'S-WORT, *Hypericum perforatum* L. Glossy, dark brown; surface roughened; end of seeds pointed.



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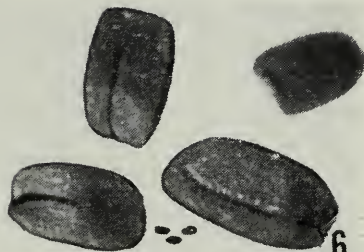
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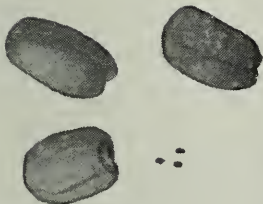
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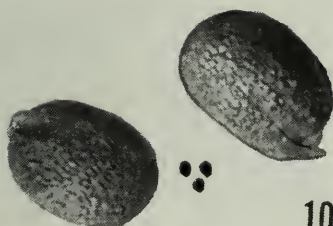
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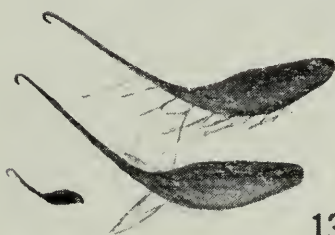
Rose,
Legume,
Spurge,
Mallow,
St. John's-wort families.



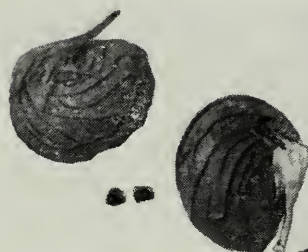
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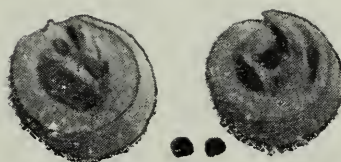
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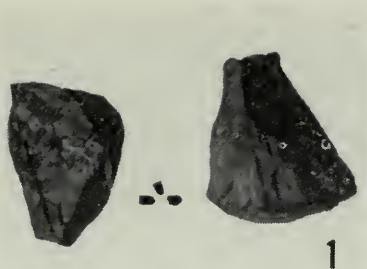


17

PLATE 21

1. EVENING PRIMROSE, *Oenothera* spp. Variable in size and shape; dark reddish-brown to black; surface roughened.
2. WATER HEMLOCK, Spotted cowbane, *Cicuta maculata* L. Brown ridges with black furrows.
3. CARAWAY, *Carum carvi* L. Light coloured ridges, with wide, brown furrows.
4. WILD PARSNIP, *Pastinaca sativa* L. Grayish-green with dark lines and rounded ridges.
5. WILD CARROT, *Daucus carota* L. Grayish; 4 rows of spines on each half of seed.
6. COMMON MILKWEED, *Asclepias syriaca* L. Dark brown; flattened.
7. FIELD BINDWEED, *Convolvulus arvensis* L. Gray to black; slightly roughened; reddish depression at lower end.
8. HEDGE BINDWEED, *Convolvulus sepium* L. Seeds rounded; dark gray to black. Much larger than field bindweed.
9. DODDER AND ALFALFA SEED, *Cuscuta* spp. (right). Small seeds gray to brown; surface slightly roughened.
10. BLUEWEED, *Echium vulgare* L. Gray or brown; rounded outer surface roughened; inner surface angular.
11. CORN GROMWELL, *Lithospermum arvense* L. Grayish; surface rough and dark pitted; two small protuberances on lower end.
12. HOUND'S TONGUE, *Cynoglossum officinale* L. Grayish with stiff spines terminating in star-shaped hooks.
13. STICKSEED, *Lappula echinata* Gilib. Gray to black; outer surface with spines terminating in star-shaped bristles; inner surface triangular and without hooks.
14. BLUE VERVAIN, *Verbena hastata* L. Brownish; more or less three-sided; margins slightly winged.
15. HEAL-ALL, *Prunella vulgaris* L. Glossy brown; white-tipped and with 4 pairs of longitudinal dark lines.

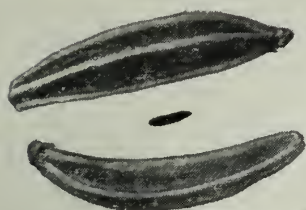
Primrose,
Parsley,
Milkweed families.



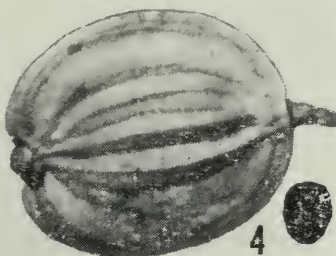
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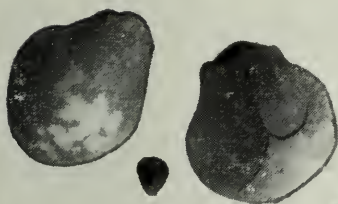


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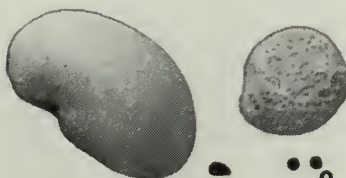
Bindweed,
Borage families.



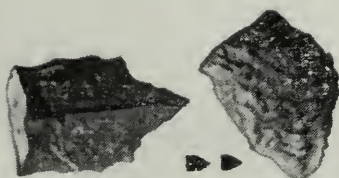
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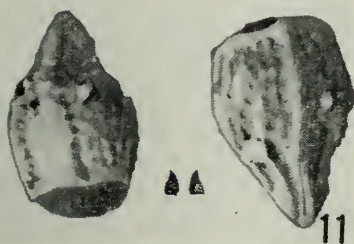
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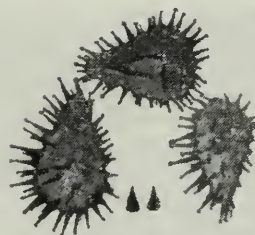
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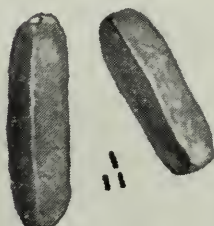


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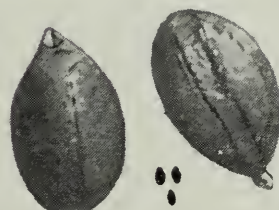


13

Vervain,
Mint,
Potato families.



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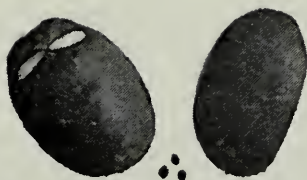
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PLATE 22

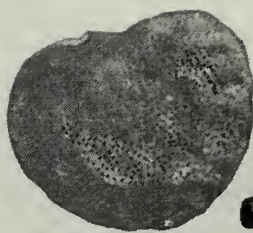
1. MOTHERWORT, *Leonurus cardiaca* L. Dark brown; triangular in cross-section; hairy at top.
2. CATNIP, *Nepeta cataria* L. Dark reddish-brown; two white spots near lower end.
3. JIMSONWEED, thorn apple, *Datura* spp. Black; coarsely wrinkled and finely pitted.
4. BLACK HENBANE, *Hyoscyamus niger* L. Light gray and coarsely pitted.
5. COMMON MULLEIN, *Verbascum thapsus* L. Dark gray to brown; rows of small projections lengthwise.
6. MOTH MULLEIN, *Verbascum blattaria* L. Dark brown; surface rough.
7. TOAD-FLAX, butter and eggs, *Linaria vulgaris* Hill. Black; lens-shaped with a very broad wing around the seed and roughened by black tubercles.
8. COMMON PLANTAIN, *Plantago major* L. Greenish-brown to almost black; variable in shape and size. Distinct scar with net work of fine wavy lines.
9. RUGEL'S PLANTAIN, *Plantago rugelii* Dcne. Black; similar in shape to common plantain but slightly larger; surface rough but not lined.
10. RIBGRASS, *Plantago lanceolata* L. Glossy dark-brown; boat-shaped with deep groove and conspicuous scar in groove.
11. TEASEL, *Dipsacus sylvestris* Huds. Light-brown; 4-sided, each side with a ridge running down the middle.
12. MARSH ELDER, poverty weed, false ragweed, *Iva xanthifolia* Nutt. Dark gray to black with fine lines and mottled; often covered with membranous coating.
13. COMMON RAGWEED, *Ambrosia artemisiifolia* L. Seed-covering gray to brown; number of spines variable; seed, pear shaped and greenish-brown.
14. GREAT RAGWEED, *Ambrosia trifida* L. Gray to brown; much larger than the common ragweed.
15. COCKLEBUR, *Xanthium* spp. Brownish; spines stiff and hooked.



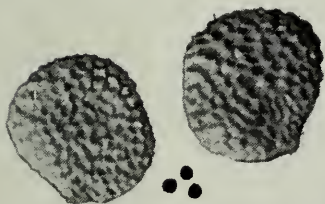
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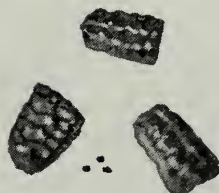


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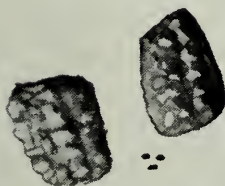


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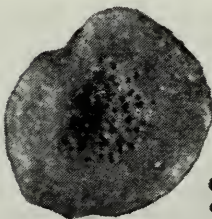
Figwort,
Plantain,
Teasel families.



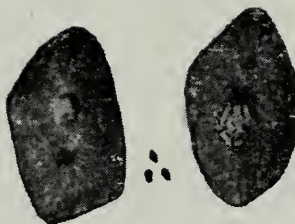
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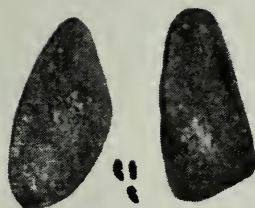
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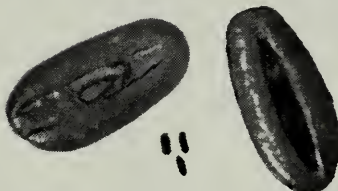
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Composite family.



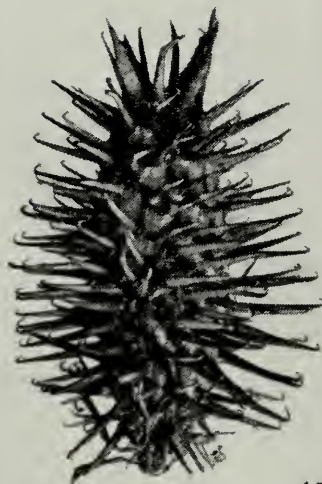
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PLATE 23

1. BLACK-EYED SUSAN, Cone-flower, *Rudbeckia* spp. Black; 4-angled with fine longitudinal lines.
2. BEGGAR'S-TICKS, pitch forks, *Bidens* spp. Brownish and flat.
3. CANADA FLEABANE, *Erigeron canadensis* L. Yellowish.
4. STINKING MAYWEED, *Anthemis cotula* L. Grayish to brownish; surface roughened by small tubercles in longitudinal rows.
5. PINEAPPLE WEED, *Matricaria matricarioides* (Less.) Porter. Light gray with brownish lines.
6. OX-EYE DAISY, *Chrysanthemum leucanthemum* L. var. *pinnatifidum* Lecoq. & Lamotte. Black with white ridges; knob-like projection at top of seed.
7. TANSY, *Tanacetum vulgare* L. Grayish; 5-ribbed.
8. YARROW, *Achillea millefolium* L. Gray with white margin; flattened.
9. COMMON GROUNDSEL, *Senecio vulgaris* L. Grayish to brown or black; surface finely ridged lengthwise and covered with fine white hairs.
10. BURDOCK, *Arctium minus* Bernh. Brown; mottled with irregular ridges.
11. NODDING THISTLE, *Carduus nutans* L. Shiny, light brown with faint, darker, dotted lines.
12. BULL THISTLE, *Cirsium lanceolatum* Hill. Grayish-brown with faint, darker lines giving a slightly mottled appearance.
13. CANADA THISTLE, *Cirsium arvense* (L.) Scop. Light brown or gray, faintly lined.
14. SCOTCH THISTLE, *Onopordum acanthium* L. Dark gray with irregular transverse ridges.
15. KNAPWEED, *Centaurea* spp. Shiny gray with faint lines.
16. RUSSIAN KNAPWEED, *Centaurea repens* L. Light gray; faintly longitudinally ridged.
17. CHICORY, *Cichorium intybus* L. Light to dark brown; somewhat angled and faintly ridged; fringe of short chaffy bristles around top.
18. FALL DANDELION, *Leontodon autumnalis* L. Brownish with longitudinal and transverse ridges; no beak.



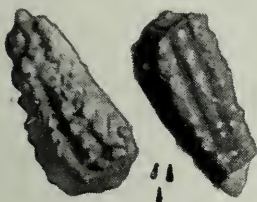
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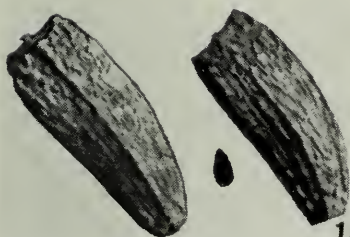
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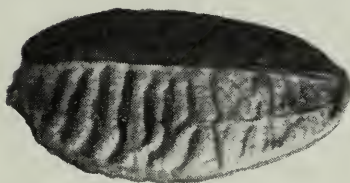
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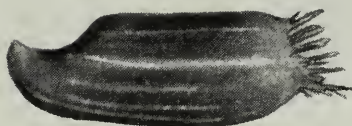
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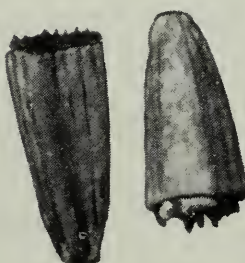
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PLATE 24

1. GOAT'S-BEARD, *Tragopogon pratensis* L. Gray to brown with longitudinal, roughened ridges.
2. PERENNIAL SOW THISTLE, *Sonchus arvensis* L. Reddish brown, longitudinal ridges heavy with numerous cross wrinkles.
COMMON ANNUAL SOW THISTLE, longitudinal ridges less distinct, cross wrinkles on the whole surface.
SPINY ANNUAL SOW THISTLE. Seed flattened; three distinct longitudinal ridges, smooth, no cross wrinkles.
3. COMMON DANDELION, *Taraxacum officinale* Weber. Brown; longitudinally ridged; ridges have spines on upper end of seed.
4. PRICKLY LETTUCE, *Lactuca scariola* L. Gray to brown; 5 to 7 longitudinal ridges on each surface and ridges faintly cross-wrinkled.
5. ORANGE HAWKWEED, *Hieracium aurantiacum* L. Black and strongly ribbed.

INDEX

	PAGE		PAGE
<i>Abutilon theophrasti</i>	45	Buckthorn, common	41
<i>Achillea millefolium</i>	67	Buckwheat, wild	15
<i>Agropyron repens</i>	7	Burdock, common	71
<i>Agrostemma githago</i>	21	Burdock, great	73
Alder buckthorn	41	Bull thistle	74
Amaranth, green	18	Butter-and-eggs	58
<i>Amaranthus albus</i>	19	Buttercup, creeping	24
<i>Amaranthus graecizans</i>	19	Buttercup, tall	24
<i>Amaranthus hybridus</i>	18	Butterfly-weed	50
<i>Amaranthus retroflexus</i>	18	<i>Camelina microcarpa</i>	29
<i>Ambrosia artemisiifolia</i>	64	<i>Camelina sativa</i>	29
<i>Ambrosia trifida</i>	66	Campion, bladder	21
<i>Anthemis cotula</i>	69	Canada fleabane	63
<i>Arctium lappa</i>	73	Canada thistle	73
<i>Arctium minus</i>	71	<i>Capsella bursa-pastoris</i>	27
<i>Asclepias incarnata</i>	49	<i>Carduus acanthoides</i>	74
<i>Asclepias syriaca</i>	49	<i>Carduus nutans</i>	74
<i>Asclepias tuberosa</i>	50	Carrot, wild	47
<i>Aster</i> spp.	63	Catchfly, night-flowering	21
<i>Atriplex patula</i>	17	Catnip	54
<i>Avena fatua</i>	9	<i>Cenchrus longispinus</i>	11
Ball mustard	29	<i>Centaurea jacea</i>	75
<i>Barbarea vulgaris</i>	32	<i>Centaurea maculosa</i>	75
Barberry, common	25	<i>Centaurea nigra</i>	75
Barberry, European	25	<i>Cerastium arvense</i>	21
Barberry, Japanese	26	<i>Cerastium vulgatum</i>	21
Barley, wild	7	Charlock	29
Barnyard-grass	9	Cheeses	42
Bedstraw, yellow	61	<i>Chenopodium</i> spp.	16
Bedstraw, white hedge	61	<i>Chenopodium glaucum</i>	16
<i>Berberis thunbergii</i>	26	Chickweed, common	20
<i>Berberis vulgaris</i>	25	Chickweed, field	21
Bindweed, black	15	Chickweed, mouse-ear	21
Bindweed, field	50	Chicory	75
Bindweed, hedge	50	<i>Chrysanthemum leucanthemum</i>	69
Bitter dock	14	<i>Cichorium intybus</i>	75
Bird vetch	35	<i>Cicuta maculata</i>	46
Black bindweed	15	Cinquefoil, rough	34
Black-eyed Susan	67	Cinquefoil, rough-fruited	34
Black knapweed	75	Cinquefoil, silvery	34
Black medick	35	<i>Cirsium arvense</i>	73
Bladder-campion	21	<i>Cirsium lanceolatum</i>	74
Blue-weed	52	Cockle, purple	21
Bouncing-bet	21	Cockle, sticky	21
<i>Brassica juncea</i>	29	Cockle, white	21
<i>Brassica kaber</i>	29	Common annual sow-thistle	79
Broad-leaved dock	14	Common barberry	25
Broad-leaved plantain	61	Common burdock	71
Broad-leaved spurge	40	Common buckthorn	41
Buckhorn	61	Common chickweed	20
Buckthorn, alder	41	Common milkweed	49

INDEX (Continued)

	PAGE		PAGE
Common mullein	58	Euphorbia peplus	40
Common peppergrass	27	Euphorbia platyphylla	40
Common purslane	19	European barberry	25
Common ragweed	64	Fall dandelion	78
Common tansy	70	False flax, large-seeded	29
Coneflower	67	False flax, small-seeded	29
Convolvulus arvensis	50	Fennel, dog	69
Convolvulus sepium	50	Field bindweed	50
Couch-grass	7	Field chickweed	21
Cowbane, spotted	46	Field horsetail	4
Crabgrass, hairy	9	Field peppergrass	26
Crabgrass, smooth	9	Finger-grass, hairy	9
Crataegus spp.	33	Finger-grass, smooth	9
Creeping buttercup	24	Fleabane, Canada	63
Creeping Charlie	55	Fleabane, daisy	64
Cress, winter	32	Fleabane, Philadelphia	64
Curled dock	14	Flixweed	32
Cuscuta spp.	50	Flower-of-an-hour	43
Cynoglossum officinale	52	Flowering spurge	40
Cyperus esculentus	12	Fox-tail grass, green	10
Cypress spurge	37	Fox-tail grass, yellow	11
Daisy fleabane	64	Galium spp.	61
Daisy, ox-eye	69	Galium mollugo	61
Dandelion	78	Galium verum	61
Dandelion, fall	78	Glecoma hederacea	55
Daucus carota	47	Goat's-beard, yellow	77
Descurainia sophia	32	Goldenrod	63
Devil's paint-brush	81	Goosefoot, oak-leaved	16
Devil, king	81	Grass, barnyard	9
Digitaria ischaemum	9	Grass, couch	7
Digitaria sanguinalis	9	Grass, finger	9
Dipsacus sylvestris	62	Grass, green fox-tail	10
Dock, bitter	14	Grass, old witch	9
Dock, broad-leaved	14	Grass, quack	7
Dock, curled	14	Grass, rib	61
Dock, sour	14	Grass, sour	14
Dodder	50	Grass, squirrel-tail	7
Dog fennel	69	Grass, tumble	9
Echinochloa crus-galli	9	Grass, twitch	7
Echium vulgare	52	Grass, smooth finger	9
Equisetum arvense	4	Grass, yellow fox-tail	11
Erect knotweed	15	Great burdock	73
Erigeron annuus	64	Great ragweed	66
Erigeron canadensis	63	Green amaranth	18
Erigeron philadelphicus	64	Green fox-tail grass	10
Erigeron strigosus	64	Ground ivy	55
Erysimum cheiranthoides	31	Hairy crabgrass	9
Erysimum hieracifolium	31	Hairy vetch	35
Euphorbia corollata	40	Hawkweed, orange	81
Euphorbia cyparissias	37	Hawkweed, yellow	81
Euphorbia esula	40	Hawthorn	33
Euphorbia helioscopia	40	Hedge-bedstraw, white	61

INDEX (Continued)

	PAGE		PAGE
Hedge bindweed	50	Mustard, hedge	30
Hedge mustard	30	Mustard, indian	29
Hemlock, water	46	Mustard, tumbling	30
Hibiscus trionum	43	Mustard, wild	29
Hieracium aurantiacum	81	Mustard, wormseed	31
Hieracium spp.	81	Narrow-leaved vetch	36
Hordeum jubatum	7	Narrow-leaved plantain ..	61
Horse nettle	56	Nepeta cataria	54
Horsetail, field	4	Neslia paniculata	29
Horseweed	63	Nettle, horse	56
Hound's tongue	52	Night-flowering catchfly ..	21
Hypericum perforatum ..	45	Nodding thistle	74
Indian mustard	29	Nut-grass, yellow	12
Ivy, poison	40	Oak-leaved goosefoot	16
Ivy, ground	55	Old witch-grass	9
Japanese barberry	26	Onopordum acanthium	74
King devil	81	Orange hawkweed	81
Knapweed, black	75	Orange milkweed	50
Knapweeds	75	Orache, spreading	17
Knotweed, erect	15	Ox-eye daisy	69
Knotweed, prostrate ..	15	Oyster plant	77
Knotweed, spotted	15	Paint-brush, devil's	81
Lactuca scariola	80	Panicum capillare	9
Lady's thumb	15	Parsnip, water	47
Lamb's-quarters	16	Parsnip, wild	47
Large-seeded false flax ..	29	Pastinaca sativa	47
Leafy spurge	40	Pennycress	26
Leontodon autumnalis ..	78	Peppergrass, field	26
Lepidium campestre	26	Peppergrass, common ..	27
Lepidium densiflorum ..	27	Perennial sow thistle	78
Lettuce, prickly	80	Petty spurge	40
Linaria vulgaris	58	Philadelphia fleabane	64
Lychnis alba	21	Pigweed, prostrate	19
Mallow, musk	42	Pigweed, redroot	18
Mallow, round-leaved ..	42	Pineapple-weed	69
Malva moschata	42	Plantago lanceolata	61
Malva neglecta	42	Plantago major	61
Malva rotundifolia	42	Plantago rugelii	61
Matricaria matricarioides ..	69	Plantain, broad-leaved ..	61
Mayweed, stinking	69	Plantain, narrow-leaved ..	61
Medicago lupulina	35	Plantain, purple-stemmed ..	61
Medick, black	35	Plantain, Rugel's	61
Milfoil	67	Poison ivy	40
Milkweed, common	49	Polygonum achoreum	15
Milkweed, orange	50	Polygonum aviculare	15
Milkweed, swamp	49	Polygonum convolvulus	15
Moth mullein	58	Polygonum erectum	15
Mouse-ear chickweed	21	Polygonum persicaria ..	15
Mullein, common	58	Prostrate knotweed	15
Mullein, moth	58	Prostrate pigweed	19
Musk mallow	42	Portulaca oleracea	19
Mustard, ball	29	Potentilla argentea ..	34

INDEX (Continued)

	PAGE		PAGE
Potentilla intermedia	34	Soapwort	21
Potentilla norvegica	34	Solanum carolinense	56
Potentilla recta	34	Solidago spp.	63
Prickly lettuce	80	Sonchus arvensis	78
Purple cockle	21	Sonchus asper	79
Purple-stemmed plantain	61	Sonchus oleraceus	79
Purse, shepherd's	27	Sorrel, sheep	14
Purslane, common	19	Sour dock	14
Pusley	19	Sourgrass	14
Quack-grass	7	Sow-thistle, common annual	79
Queen Anne's lace	47	Sow-thistle, spiny annual	79
Ragweed, common	64	Sow-thistle, perennial	78
Ragweed, great	66	Spiny annual sow thistle	79
Ranunculus acris	24	Spotted cowbane	46
Ranunculus repens	24	Spotted knotweed	15
Redroot pigweed	18	Spreading orache	17
Rhamnus cathartica	41	Spurge, broad-leaved	40
Rhamnus frangula	41	Spurge, Cypress	37
Rhus radicans	40	Spurge, flowering	40
Rib-grass	61	Spurge, leafy	40
Rocket, yellow	32	Spurge, petty	40
Roman wormwood	64	Spurge, sun	40
Rough cinquefoil	34	Squirrel-tail grass	7
Rough-fruited cinquefoil	34	St. John's-wort	45
Round-leaved mallow	42	Stellaria media	20
Rudbeckia serotina	67	Sticky cockle	21
Rugel's plantain	61	Stinking mayweed	69
Rumex acetosella	14	Stinkweed	26
Rumex crispus	14	Sun spurge	40
Rumex obtusifolius	14	Susan, black-eyed	67
Rush, scouring	4	Swamp milkweed	49
Russian thistle	17	Tall buttercup	24
Salsify	77	Tanacetum vulgare	70
Salsola kali	17	Tansy, common	70
Saltwort	17	Taraxacum officinale	78
Sandbur	11	Tare	35
Saponaria officinalis	21	Tare, wild	36
Scotch thistle	74	Teasel	62
Scouring-rush	4	Thistle, bull	74
Setaria glauca	11	Thistle, Canada	73
Setaria viridis	10	Thistle, nodding	74
Sheep sorrel	14	Thistle, Russian	17
Shepherd's purse	27	Thistle, Scotch	74
Silene noctiflora	21	Thistle, welted	74
Silene cucubalus	21	Thlaspi arvense	26
Silvery cinquefoil	34	Thorn-apple	33
Sisymbrium altissimum	30	Toadflax	58
Sisymbrium officinale	30	Tragopogon dubius	77
Sium suave	47	Tragopogon porrifolius	77
Small-seeded false flax	29	Tragopogon pratensis	77
Smooth crabgrass	9	Trefoil, yellow	35
Smooth finger-grass	9	Tufted vetch	35

INDEX (Continued)

	PAGE
Tumbling mustard	30
Tumble-grass	9
Tumbleweed	19
Twitch-grass	7
Velvet-leaf	45
Verbascum blattaria	58
Verbascum thapsus	58
Vetch, bird	35
Vetch, hairy	35
Vetch, narrow-leaved	36
Vetch, tufted	35
Vicia angustifolia	36
Vicia cracca	35
Vicia villosa	35
Water hemlock	46
Water parsnip	47
Wetted thistle	74
White cockle	21
White hedge bedstraw	61

	PAGE
Wild barley	7
Wild buckwheat	15
Wild carrot	47
Wild mustard	29
Wild oats	9
Wild parsnip	47
Wild tare	36
Winter-cress	32
Witch-grass, old	9
Wormseed mustard	31
Wormwood, Roman	64
Yarrow	67
Yellow bedstraw	61
Yellow fox-tail grass	11
Yellow goat's-beard	77
Yellow hawkweed	81
Yellow nut-grass	12
Yellow rocket	32
Yellow trefoil	35

ACKNOWLEDGMENTS

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